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Why politicians need an evidence-based approach to policy problems

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Contents

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Summary

- Evidence is meant to be at the heart of policymaking – the essential basis for understanding problems, clarifying trade-offs, and identifying effective solutions. European leaders often claim to be pursuing a gold-standard of evidence-based policymaking.
- However, as this paper outlines, European politicians often pursue popular (and populist) agendas that are not based on scientific evidence. This paper assesses the scientific evidence in four core areas of European policy, energy, health, pensions, and agriculture, and draws on a vast array of examples from Germany, France, Poland, Italy, Spain, Greece, Czechia, and Romania.
- The first chapter assesses the energy policy of the EU, which is meant to be driven by three goals: opening up the market, decarbonisation, and energy security. Until the 2022 energy crisis, decarbonisation had been by far the most important goal of the bloc's energy policy, often at the expense of the other two.
- Sound policies include the liberalisation of energy markets through the removal of unnecessary barriers to competition and the rolling back of direct government intervention in the market, such as by privatising and potentially breaking up state-controlled monopolies.
- Environmental goals should be pursued in a technology-neutral framework: direct incentives for adopting specific energy sources should be phased out, while measures such as carbon pricing, depreciation of premiums, or incentives for long-term contracting with low-carbon electricity generators should be considered.
- To support investments in safer, cheaper, and cleaner technologies, bureaucratic red tape should be significantly reduced, for example, by designating specific areas where there will be no or reduced

environmental impact assessments; bans on nuclear power should also be lifted.

- The second chapter assesses the war on drugs and nicotine in selected EU member states. The evidence shows that drug prohibition leads to significant social costs, including increased organised crime, violence, and corruption, and increased pressure on the police and the judiciary, which are already overstretched.
- Global best practices with regard to drug policy involve decriminalisation, as seen in countries such as the Netherlands and Portugal. Decriminalisation reduces incarceration rates and lowers the burden on the criminal justice system. In Portugal, it has also led to a significant reduction in the HIV transmission rate among drug users and a decrease in the overall social costs related to drug use.
- Nicotine harm reduction involves the promotion of less risky alternatives to traditional smoking, such as electronic cigarettes and heated-tobacco products. These innovative products significantly reduce the health risks associated with smoking by eliminating the production of harmful substances associated with combustion. Best practices from countries such as the United Kingdom and Sweden show that reduced-risk nicotine products have helped lower smoking prevalence and the related health risks.
- Encouraging the adoption of reduced-risk nicotine products will help align consumer preferences with public health objectives, potentially saving millions of lives by reducing smoking-related deaths
- The third chapter outlines how European pension systems face significant challenges due to ageing populations and mounting debts and deficits, thus limiting essential investments.
- Politicians made unfunded and generous pension promises based on current general taxation revenues instead of saving contributions for later use. This made for relatively generous pension systems in the early days when populations were young and there were few pensioners.
- However, this system has become financially unsustainable due to fewer younger workers contributing to the system and the growing number of older pensioners living longer and withdrawing from the system. The result is massive underinvestment: the authors calculated a retirement savings shortfall of 5.6 per cent of the gross domestic product (GDP) in the EU, or €823 billion, in 2021.

- The final chapter explores the EU's Common Agricultural Policy (CAP), which aims to ensure a stable and sustainable agricultural sector in the EU and accounts for around 40% of the EU's total spending.
- The CAP as well as national-level subsidy schemes can distort market prices and create inefficiencies in the economy. By artificially depressing the price of agricultural products, subsidies can discourage the efficient allocation of resources and hinder market-oriented innovation.
- The scientific evidence does not support the claim that genetically modified crops are harmful to human health; yet, the EU still imposes a strict regulatory framework for genetically modified organisms (GMOs), which has made it more difficult and expensive to develop these crops. This has discouraged investment in GMO research and development in the EU. As a result, EU farmers have limited access to GMO technologies compared with farmers in other parts of the world.
- Politicians should endeavour to pull up the best possible information, be honest about their limitations, and only intervene when there is evidence that their chosen solution is better than all the others, including inaction.

Introduction: The quest for QED

By Matthew Lesh, Director of Public Policy and Communications at the Institute of Economic Affairs

Evidence is meant to be at the heart of policymaking – the essential basis for understanding problems, clarifying trade-offs, and identifying effective solutions. European leaders often claim to be pursuing a gold standard of evidence-based policymaking.

In December 2023, for example, the European Council, comprised of the heads of government of twenty-seven European Union (EU) member states, reconfirmed its commitment to evidence. The Council concluded with a lofty goal: 'All fields of science, including social sciences and humanities, by producing evidence-based knowledge, should play a more significant role in the policymaking process for the identification of political challenges, the analysis of the state of the art, the framing of the solutions' (Council of the European Union 2023: 8).

In practice, however, policymakers live in a world of significant uncertainty, limited knowledge, and political calculations.

Herbert Simon, a Nobel laureate in economics, established the concept of bounded rationality in decision-making. Simon highlighted the impossibility of humans making entirely rational decisions due to limited information, time, and cognitive capacity. These limitations mean that humans' decision-making results in satisfactory rather than optimal outcomes. F. A. Hayek (1945: 519), in his seminal essay, 'The Use of Knowledge in Society', similarly highlighted that 'knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely

as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess'.

The economic problem, therefore, is the 'utilization of knowledge which is not given to anyone in its totality', Hayek (1945) writes. Lack of knowledge is at the heart of a long history of poor policymaking, resulting in unforeseen negative consequences. It is difficult, if not impossible, for policymakers to predict how even their best-intentioned lofty ideas for improving society will play out on the ground as they lack knowledge of complex and unpredictable social systems.

A classic case, known as the cobra effect, was the attempt by the British government in India to reduce the population of venomous snakes by offering a bounty for every dead cobra. Initially, the number of snakes declined. But ultimately, enterprising individuals began breeding and killing cobras as a source of income. Eventually, the government ended the scheme, and the snakes were set free, thus increasing the wild cobra population. This is an example of a well-intentioned policy that backfired.

Human infallibility in decision-making requires that policymakers be extremely humble. At the very least, politicians should endeavour to pull together the best possible information, be honest about their limitations, and only intervene when there is evidence that their chosen solution is better than all the others (including inaction). In the spirit of Hayek, policymakers should also limit their interventions and rely heavily on prices and markets as they effectively harness decentralised knowledge to coordinate human activity.

In practice, policymakers, in the words of political scientist Charles Lindblom, 'muddle' through. They claim to be gathering the best possible evidence and using it effectively, but sadly, these claims are often hollow. Time and time again, even when evidence for various policy options does exist, it is either ignored or cherry-picked to enable the pursuit of their predetermined policy option.

This volume highlights how European policymakers have failed to pursue best practices across several areas. The central theme in the chapters is that policymakers fail to use the best possible tools to tackle various policy challenges, from decarbonisation and public health harm reduction to agricultural innovation. There cannot be complete certainty about policy since humans are flawed for the aforementioned reasons, but there can be a better effort to learn from experience.

In the energy and environment field, Carlo Stagnaro (Chapter 1) investigates the gaping hole between lofty decarbonisation promises and ineffective industrial policies in the EU. He shows that technology policies such as cap and trade and carbon pricing are the most cost-effective and innovation-enabling means of reducing emissions. That's because with carbon pricing policymakers do not need to decide in advance which means of carbon reduction is the most effective, something that they lack the knowledge and expertise to evaluate. Instead, these policies incentivise individual firms to discover the most cost-effective carbon reduction measures through market incentives.

Based on this market-driven approach to industrial emissions, the EU's Emissions Trading Scheme is widely regarded as a success story. Stagnaro contrasts this with the provision of inconsistent subsidies for renewable technologies, discrimination against nuclear energy and carbon capture, and differentiated energy taxation. The tendency of politicians to use these policies to pick technological winners and losers – often based on political favouritism – has resulted in higher costs for worse environmental outcomes, specifically severe energy insecurity, higher costs for households and businesses, and record levels of inflation in the eurozone in 2022. The most damning cases are the countries that have phased out nuclear power, namely, Germany and Italy, which has resulted in an effective increase in emissions.

'Policies have often been developed in a disorderly way, reflecting the influence of vested interests rather than a sound approach to broad political goals – sustainability or energy security – while promoting competition and improvement of the services ultimately rendered to citizens and businesses', Stagnaro writes. 'Energy is the foundation of any modern society: using evidence to inform policy, therefore, should be a no-brainer'.

Based on a careful analysis of national-level policies, Stagnaro shows that the most effective way to rectify this disastrous policymaking is by implementing a combination of liberalising energy markets, removing barriers to competition such as price controls, getting rid of subsidies, and even privatising or breaking up state-controlled monopolies. He also advocates for a technologically neutral framework based on carbon pricing (through carbon taxes or cap-and-trade schemes), depreciation of premiums, and long-term contracting for low-carbon energy. This should be combined with reducing red tape, such as burdensome environmental impact assessments and bans on nuclear power.

In the sphere of public health, Constantinos Saravakos and Chris Mantas (Chapter 2) contrast the dire consequences of prohibition with best-practice harm reduction – a focus on minimising adverse effects rather than fruitless campaigns to eliminate drug use. Bans, regulation, and taxation have fuelled organised violent crime and corruption, increased pressure on criminal justice systems, and proven financially costly for governments. That's because restrictive policies do not, for the most part, end the underlying demand for a product. They simply shift purchases to illicit supply chains. This promotion of criminal behaviour appears particularly unnecessary for 'soft drugs', such as cannabis, which have limited negative individual, societal, or health impacts.

Saravakos and Mantas highlight the decriminalisation policies in the Netherlands and Portugal that have effectively eased the pressure on their criminal justice systems and decreased the health-related costs of drug use, by cutting down human immunodeficiency virus (HIV) transmission among heroin users, while not significantly increasing drug addiction. This experience offers important lessons on how to approach nicotine harm reduction products, including electric cigarettes, heated tobacco, and snus. There is clear evidence from various scientific studies that these products are significantly safer than cigarettes. They are also relatively popular among consumers and have helped reduce the prevalence of cigarette smoking.

A global shift away from cigarettes to reduced-risk products could decrease premature and preventable deaths by nearly a billion in this century. Yet, European governments have tended to apply strict regulation and taxation policies, leading to lower uptake but worse health outcomes. Policymakers who value evidence should learn from the failures of the war on drugs and adopt a more liberal approach to harm reduction by allowing the use of reduced-risk products.

In Chapter 3, Christian Năsulea and Nicolas Marques explore the thorny issue of pensions in Europe. Analysis of various national systems reveals a common theme. Politicians made unfunded and generous pension promises based on current general taxation revenues (pay-as-you-go) instead of saving the contributions for later use (capitalisation). This made for relatively generous pension systems in the early days when populations were young and there were few pensioners. However, this system has become financially unsustainable owing to fewer younger workers contributing to the system and the growing number of older pensioners living longer and taking out of the system. The result is massive

underinvestment: Năsulea and Marques calculated a retirement savings shortfall of 5.6 per cent of the gross domestic product (GDP) in the EU, or €823 billion, in 2021.

The case studies, which include France, Greece, Italy, Romania, and Spain, make for sober reading. There have been various attempts at reforms to improve financial sustainability with limited progress. Yet, overall, there has been a political failure to rein in overly generous systems. The broader picture is a failure to follow the evidence, political posturing, and continuing unfunded liabilities. Năsulea and Marques show that workers could receive much higher amounts in retirement, amounting to hundreds of billions more each year, through private pension systems that invest savings. This would also give individuals more choice in terms of retirement age and reduce the fiscal burden on the broader community while boosting the capital available for investment across the economy. It could complement public pension systems, which can help individuals who have been unable to save enough cope with shocks. The authors conclude with country-specific recommendations to help re-balance pension funding towards contributory schemes.

In Chapter 4, Christian and Diana Năsulea investigate European agricultural policy, highlighting the detrimental effects of policies that fail to follow the best evidence for consumers, the environment, and taxpayers – beginning with the Common Agricultural Policy (CAP), which makes up around 40% of the EU's total spending, and additional national-level subsidy regimes. These subsidies are costly for taxpayers, distort market prices, create deep inefficiencies, and hurt farmers in developing markets. Because of the highly bureaucratic system, they disproportionally benefit the largest and wealthiest companies, which have the resources to apply for various grants. They also reduce the incentive for farmers to respond to consumer needs and discourage investment in more innovative technologies and processes. Outdated methods and over-farming also damage the environment.

Excessive regulation, which is not based on evidence, damages the agriculture sector. Genetically modified organisms (GMOs) have the potential to increase crop yields, improve nutrition, and reduce pesticide use. Yet, the technology is outright banned in sixteen countries or faces stringent EU red tape elsewhere due to health- and environment-related fears. The evidence, however, does not support this excessively precautionary approach, with study after study showing them to be safe for human consumption. This includes toxicological, allergenicity, and

environmental impact studies. Spain is one exception, having permitted genetically modified maize since 1998 without incident. This has resulted in a 37% reduction in insecticide spraying and streamlined fuel use, resulting in less water consumption and reduced greenhouse gas emissions. However, most other European countries block this positive outcome for farmers, consumers, and the environment.

Farmers in Europe also face challenges from incoming environmental regulations, such as strict nature restoration rules and targets to reduce pesticide usage, which could significantly reduce crop yield. There are also ongoing challenges due to stringent labour market regulations and the resultant need for more foreign workers. Christian and Năsulea conclude by providing practical, evidence-based recommendations to improve European agriculture, including abandoning tariffs and adopting a New Zealand–style reform agenda, loosening costly environmental red tape, reforming GMO regulations, and enhancing migration policies.

European policymakers frequently profess adherence to evidence-based policymaking. In practice, however, a significant gap remains between rhetoric and reality. The case studies examined across various policy domains – from energy and the environment to public health, pensions, and agricultural policy – reveal a consistent pattern of political expediency, vested interests, and lack of adherence to sound evidence-based principles.

These findings underscore the need for a paradigm shift in European policymaking. It is clear that political will guided by comprehensive, unbiased evidence is essential to address Europe's complex challenges today. This involves moving beyond short-term political gains and vested interests to develop policies genuinely informed by scientific insights, an economic rationale, and a commitment to long-term sustainability and societal well-being. As this volume vividly illustrates, only through such a rigorous, evidence-based approach can European policymakers hope to meet the needs of their citizens and ensure a prosperous future.

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Chapter 1: Re-powering Europe through the right energy policies

By Carlo Stagnaro, Research & Studies Director of the Istituto Bruno Leoni

Summary

- The EU's energy policy is driven by three goals: opening up the market, decarbonisation, and energy security. In the past few years, and up until the 2022 energy crisis, decarbonisation had become by far the most important goal of the bloc's energy policy.
- Both at the EU and national level, however, decarbonisation has been pursued through the implementation of industrial policies that, rather than aiming to reduce carbon emissions at the lowest possible cost, rely on picking technological winners and losers.
- This has resulted in market distortions, high energy costs for households and businesses, and ultimately, energy insecurity. In 2022 in particular, Europeans realised that there was a tangible risk of disruptions in the natural gas and electricity markets and paid unprecedented prices, pushing inflation to record levels since the introduction of the euro.
- Evidence from international experience may provide guidance to reform the energy policies of the EU and its member states, by also leveraging the success stories of some member states.
- Sound policies include the liberalisation of energy markets, through the removal of unnecessary barriers to competition (particularly price regulation of electricity and natural gas, where still in place) and the rolling back of direct government intervention in the market, such as by privatising and potentially breaking up state-controlled monopolies.

- Environmental goals should be pursued in a technology-neutral framework: direct incentives for adopting specific energy sources (regardless of the actual environmental benefits they produce) should be phased out while such measures as carbon pricing (via carbon taxes or cap-and-trade schemes), depreciation premiums, or incentives for long-term contracting with low-carbon electricity generators should be considered.
- To support investments in safer, cheaper, and cleaner technologies, bureaucratic red tape should be significantly revised, for example, by designating specific areas where there will be no or reduced environmental impact assessments; bans on nuclear power should also be lifted.
- Extraordinary measures introduced in 2022, such as price caps, should be swiftly removed.

Introduction

Under the Treaty on the Functioning of the European Union, energy is a shared competence between the union and the member states (Article 4(2) TFUE). In particular, the union is tasked with the goals of i) ensuring the functioning of the energy market; ii) ensuring the security of energy supply in the union; iii) promoting energy efficiency and energy saving and the development of new and renewable forms of energy; and iv) promoting the interconnection of energy networks (Article 194(1) TFUE). Other crucial choices, such as those pertaining to which technologies should be allowed, are left to the member states.

The union, however, has more substantial powers in the fields of competition and environmental protection. Therefore, the EU's energy policy has been traditionally driven by two objectives: promoting greater integration of energy markets across member states and reducing the environmental footprint of energy production and consumption. While in the late 1990s and early 2000s the former goal was an important engine for reforms, particularly in the electricity and natural gas markets, the latter goal of making the European economy carbon-neutral by 2050 has progressively become the most important driver of Europe's energy policy. A third target, i.e., energy security, has for a long time largely been ignored, at least until the crisis of 2021–2022 and Russia's weaponisation of natural gas following the invasion of Ukraine.[1]

Energy policy is to a large extent harmonised, but there is still considerable scope for policy experimentation and variations at the national level. These include, but are not limited to, the energy mix, the degree of market

1 'Energy policy: general principles', *European Parliament*, April 2023 (https://www.europarl.europa.eu/factsheets/en/sheet/68/energy-policy-general-principles).

liberalisation, taxation, environmental targets, etc. Implementing a variety of policies helps in identifying best and worst practices, both from a free-market perspective, and based on evidence collected by scholars about how energy markets work and how the economy may be made cleaner without hindering economic growth.

This chapter reviews the energy policies of eight EU member states – the Czech Republic, France, Germany, Greece, Italy, Poland, Romania, and Spain – to determine whether they are based on the available evidence, internally consistent, effective and efficient, and to what extent the soundest policies can be replicated by other member states.

In 2021, the total energy consumption of the whole European Union (EU) was about 885 million tonnes of oil equivalent (MTOE). The main contributors to this were oil products, which accounted for about 37 per cent, mostly used in the transportation sector, followed by electricity (24.1 per cent), natural gas (23.9 per cent), and non-electric renewables and biofuels (12.5 per cent). Electricity was mostly generated from renewable sources (37.9 per cent), nuclear power (25.2 per cent), natural gas (19.9 per cent), and coal (14.6 per cent).[2] These average values should be taken with a grain of salt as they reflect considerable variability in the national energy mix, depending on the structure of the economy, endowment of natural resources such as wind or hydropower, and political stances such as those regarding nuclear power.

There are, however, some similarities across member states. In most member states, oil products are the largest energy source, mainly because they can hardly be substituted in the transportation sector, even though this may change to some extent in the next few years as electric vehicles (EVs) improve and become more affordable. The markets for oil and oil products are highly competitive, which means that they are subject to considerable environmental and security regulations. But the degree of state intervention is otherwise limited. Additionally, the volume of demand is declining because internal combustion engines are gradually being substituted by EVs, and even the remaining ones are increasingly becoming fuel-efficient. This trend might even accelerate should the EU confirm the phase-out of internal combustion engines (ICEs) after 2035. At any rate, the production and consumption of oil products are heavily taxed and subject to the

2 Source: European Commission. See: https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en

Emissions Trading System (ETS), the EU-wide cap-and-trade scheme to reduce CO_2 emissions resulting from industrial processes.

Other industries, also related to the provision of energy, have different features. Electricity and natural gas, in particular, rely on transmission and distribution networks that function like a natural monopoly, i.e., they are not replicable and control access to the market. Therefore, these industries are heavily regulated, especially with regard to access to infrastructure, usage tariffs, quality of service, etc. Moreover, these industries are subject to further regulations, incentives, or bans aimed at improving energy efficiency and renewable sources of energy. This may have a significant impact on competition. While there is a common EU-level framework, member states still have wide discretion, for example, in the design of wholesale markets, the regulation of retail markets, and how and to what extent to incentivise renewable energies.

Experiences so far, both within Europe and elsewhere, provide important lessons concerning the effect and design of regulations, and tax or incentive design, in pursuing the desired environmental or consumer-protection goals without hindering competition. Policies have often been developed in a disorderly way, reflecting the influence of vested interests rather than a sound approach to broad political goals – sustainability or energy security – while promoting competition and improvement of the services ultimately rendered to citizens and businesses. Energy is the foundation of any modern society: using evidence to inform policy, therefore, should be a no-brainer.

This chapter is divided into four parts: this introduction; a section about the policies concerned with market opening and integration, with specific regard to the electricity and natural gas markets; a section on environmental policies; a section discussing energy security and the emergency measures adopted during the energy crisis of 2021–2022, which are to some extent still in force; and a conclusion.

Market opening: Electricity and natural gas

When reforms targeting the electricity and natural gas industries were introduced in the late 1990s, in most member states, the services were provided by state-owned, vertically integrated, legal monopolies. Following the pioneering experiences of Great Britain and Norway with liberalisation, markets were gradually opened and former monopolies broken down or rolled back (Helm 2002). Opening up the market was also viewed as instrumental to greater integration of European markets, which would have been impossible had legal monopolies presided over the provision of electricity and natural gas, within each member state.

The EU passed several packages to reform the electricity and natural gas markets. These had three main goals:

- Introducing competition in the fields of electricity generation and import, natural gas production and import, and wholesale and retail commerce of these commodities;
- Regulating natural monopolies (mainly power and natural gas networks) so that usage tariffs are cost-reflective, and access is granted with non-discriminatory conditions to all market participants;
- More gradually but decisively incentivising investment in renewable energy sources.

To achieve these results, several directives and regulations have been introduced. They aim to allow competition where possible and provide for neutral, non-discriminatory management of essential facilities where needed. These norms also require member states to establish independent regulators to make regulatory choices independent of the influence of vested interests and political cycles.

As Bentsos and Papacharalampous (2023) summarise,

> The cornerstones of EU energy framework are the three energy packages. The First Energy Package in electricity (96/92/EC) and gas (98/30/EC) set common rules for the internal market, providing third-party access to the network, decoupling trading of electricity and gas from their physical availability in a particular network, and separating the generation and supply from transmission and distribution. The Second Energy Package (2003/54/EC) led to further legal unbundling of the energy-related functions. It established the National Energy Regulators (NRAs) and introduced strengthened provisions regarding the separation of transmission and distribution. The Third Energy Package (2009/72/EC) provided the legal framework for the ownership unbundling of activities (production and supply versus transmission and distribution) for the promotion of competition. ACER and ENTSO-E were established along with network codes setting the common rules for the electricity management within the common market. Regulation (EU) 2019/943 set rules to ensure the functioning of the internal electricity market.

A further reform is currently under discussion, but it will not be dealt with in this paper.[3]

Other regulations – particularly Directives 2001/77/EC, 2009/28/EC, EU/2018/2001, and EU/2023/2413 – introduce obligations for member states to ensure that an increasing amount of the energy they consume comes from renewable sources. This has a highly significant impact on electricity systems because renewables are especially used to generate electricity. These regulations are part of larger political packages, such as 'Fit for 55', which aim to make the EU the cleanest economy in the world by setting obligations to cut CO_2 emissions and achieving specific objectives concerning renewable energy and energy efficiency. As environmental targets have subsumed the push towards greater liberalisation, the viability of free markets has been questioned and new regulations have been introduced. Unfortunately, this policy is not based on sound evidence, nor is it the best suited for achieving the desired environmental goals. Once again, Great Britain – which previously led the

3 'Why is the EU reforming the electricity market?', *European Council*, 23 October 2023 (https://www.consilium.europa.eu/en/policies/electricity-market-reform/#:~:text=The%20reform%20of%20the%20electricity%20market%20was%20first%20presented%20by,in%20the%20wholesale%20energy%20market).

struggle to open up energy markets – is at the forefront of bolstering state control (Robinson 2013).

Wholesale

Under EU law, any entity can generate electricity or produce and import natural gas. However, not all member states have interpreted this principle in the same way. Some have maintained norms that, while formally consistent with the principle of free entry, in actuality prevent competitors from challenging incumbents. Table 1 shows the market share of the incumbent in each market in the member states covered in this chapter, as well as the primary energy source used to generate electricity.

Table 1. Wholesale market data (2021)

Member state	Market share of the largest natural gas producer/ importer (%)	Market share of the largest electricity generator (%)	Main energy source used to generate electricity (% share)
Czech Rep.	23	63	Solid fossil fuels (40.2)
France	58	79	Nuclear (68.4)
Germany	NA	26	Solid fossil fuels (28.0)
Greece	38	45	Natural gas (41.1)
Italy	48	17	Natural gas (50.6)
Poland	88	17	Solid fossil fuels (71.0)
Romania	39	30	Hydropower (29.8)
Spain	25	24	Natural gas (26.5)

Source: European Commission. See: https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en

As can be seen in Table 1, at least at first glance, most member states have been successful in promoting the entrance of new operators into the market. In a few cases, however, the markets are overly saturated. This is true of the import and production of natural gas in Poland, where the incumbent has an 88 per cent market share, and electricity production in France and the Czech Republic, where the incumbent has a market share

of 79 per cent and 63 per cent, respectively. Both, the largest Polish company (PKN Orlen) and the largest energy generators in France (EDF) and the Czech Republic (ČEZ), are state controlled. There is a clear nexus between state involvement with the incumbent and its market dominance. This will be addressed later in the chapter.

As far as the energy mix is concerned, some countries have a dominant source: this is the case for nuclear power in France, coal in Poland, and natural gas in Italy. Such trends are often, but not necessarily, linked with the dominance of state-controlled firms. However, renewable energies – if taken collectively – play a larger role than any other source in several countries, including Germany (40.2 per cent, of which wind power alone accounts for 19.5 per cent), Romania (44.8 per cent, of which hydropower alone accounts for 29.8 per cent), and Spain (47 per cent, led by wind power at 22.6 per cent). Under the EU law, member states have an obligation to increase the share of renewable energies, especially in the power sector.. This has been achieved, in part, by the governments strongly subsidising these energy sources. Table 2 shows the share of energy receiving support and the average value of the support provided.

Table 2. Share of supported electricity production and value of the support

Member state	Share of electricity receiving support (2020) (%)	Weighted average support level (2021) (£/MWh)
Czech Rep.	10.5	190.55
France	11.9	49.57
Germany	38.7	97.64
Greece	30.3	–58.44*
Italy	22.1	168.31
Poland	14.0	42.03
Romania	NA	NA
Spain	20.8	95.05

Source: CEER

* The value is negative due to the exceptionally high wholesale power prices in 2021.

Table 2 shows that the share of energy supported is sizeable in all member states and huge in some cases (particularly in Germany, where almost 40 per cent of the renewable energy produced receives some form of support). The unit incentive is also large, especially in countries such as the Czech Republic (£190.55/MWh) and Italy (£168.31/MWh), even though the average level of support is declining as new, less generous subsidy schemes take over the previous, more generous ones (CEER 2023). In some cases, including in Greece and recent installations in other member states, the support may attain a negative value when power prices reach extremely high levels, for instance, in 2021 and 2022. This means that the support takes the form of contracts for differences (CFDs) or similar arrangements, under which generators are granted given prices. If prevailing market power prices are below the threshold, generators receive the difference, but if power prices exceed the threshold, generators are required to pay the difference back.

As we shall see later, subsidies – even if well intentioned – may create huge distortions in market functioning. Therefore, they should be revised and phased out. Alas, developing renewable energy sources often involves time- and resource-consuming procedures and pervasive bureaucracy, all of which increases the implicit cost of developing new facilities. The development of other energy sources, including the construction of import facilities for natural gas such as regassification plants, nuclear power, and the extraction of natural gas, is also subject to burdensome regulations or limitations and, occasionally, even bans (several member states do not allow fracking or nuclear power). In some cases, ad-hoc regulations have been introduced to limit or even prevent the development of these installations. For example, in Poland the expansion of wind power has been blocked because of rules for minimum distances of wind farms from buildings, Spain has introduced caps on the annual installed capacity of some renewable technologies, and some Italian regions have adopted moratoriums on new utility-scale wind or solar farms. Germany has established procedural simplifications to accelerate the deployment of renewables; these include the possibility of ‘overriding public interest’ and the designation of specific areas where wind farms below a certain size can be developed without prior approval. Italy has also instituted a similar mechanism but not yet fully implemented it.

Retail

Despite some limitations and distortions, electricity generation and the import or production of natural gas are relatively open to competition throughout the member states. The same cannot be said of retail markets, which are still heavily regulated across the region.

The Second and Third Energy Packages, described earlier, provided that EU member states allow each customer – including small ones such as small businesses and households – to freely choose their energy provider by 2007. New countries were required to comply with this and other obligations as conditions for admission into the EU. Unfortunately, while formally allowing retail choices, some member states have retained forms of price regulation, which were expanded in response to the energy crisis in 2022.

Table 3 shows the main ordinary measures (i.e., extraordinary measures are not listed) in the member states. As is evident in the table, countries with more pervasive forms of price regulation are also characterised by more highly concentrated markets because the persistence of price regulation is often associated with greater or less contestable market shares of the incumbents (ACER-CEER 2023).

Table 3. Price regulation in the electricity and natural gas markets in the member states (as of 2022), excluding emergency measures

Member state	Electricity	Cumulative market share, main retailers (2021)* (%)	Natural gas	Cumulative market share, main retailers (2021)* (%)
Czech Rep.	–	64.8	–	58
France	Regulated prices offered by main electricity supplier to residential consumers	74.3	Regulated gas prices offered by incumbent supplier	68
Germany	–	NA	–	25
Greece	Regulated prices for consumers supplied by Universal Service Supplier and Supplier of Last Resort; percentage discount to energy bill component for vulnerable consumers		Regulated tariffs for consumers supplied by Universal Service Supplier and Supplier of Last Resort	
Italy	Regulated prices of Last Resort Supply Scheme ('*maggior tutela*' or standard offer regime) (to be phased out in 2024)	51.0	Regulated prices of Last Resort Supply Scheme ('*maggior tutela*' or standard offer regime) (to be phased out in 2024)	49
Poland	Regulated prices for default supplier	80.0	Regulated prices for gas	84
Romania	–	67.0	–	78
Spain	–	71.5	Last Resort Tariff for gas	66

Source: ACER-CEER and European Commission.

* The market share of the largest retailer is not available for all member states in the electricity market. Therefore, the cumulative market share of the main retailers (i.e., retailers with sales >5 per cent of the total) is provided, as a proxy of market concentration. For the sake of homogeneity the same data is provided for the natural gas market.

Concentration indices also show that retail markets are far from competitive in many member states (ACER-CEER 2023). Greater liberalisation is instrumental to integrating national markets but, more importantly, is associated with lower prices (Amenta et al. 2022) and greater innovation (Littlechild 2021). Member states should remove any remaining forms of price regulation and allow full-fledged competition at both the wholesale and retail levels.

Privatisation

High concentration at the wholesale and retail levels is often associated with greater state control over the incumbents. In fact, there is ample evidence that state ownership undermines competition (Shleifer 1998). In the case of energy, the problem with state ownership is exacerbated by the fact that the entire industry used to be run as a state-controlled, vertically integrated legal monopoly until a few decades ago in most EU member states.

For some time, the push towards market opening has induced governments to partially or fully privatise former monopolists, in some cases, breaking them down along horizontal and/or vertical lines. Horizontal disintegration is useful to reduce the size of monopolists and allow newcomers to rapidly enter the market and challenge monopolists. But vertical disintegration in network industries is even more important because it provides market participants with the guarantee that essential facilities will be run in an impartial and non-discriminatory way. In particular, some countries, such as the Czech Republic, Greece, Italy, and Spain, have mandated that natural electricity transmission networks should not be owned by companies that have interests in the production, import, or commerce of electricity. Meanwhile France, Italy, Poland, and Spain have done the same for natural gas transportation networks (ownership unbundling). This is a best practice that should be followed elsewhere.

Regardless, many governments have maintained stakes in the former monopolists, and sometimes even full ownership. Even though that does not formally prevent free entry into the market or restrict competition, there are three main channels through which state ownership may undermine market functioning (Stagnaro 2014):

- State-controlled firms are to any practical extent protected from the risk of failure and their control is not contestable in practice. Therefore, they have less incentive to be economically efficient because managers and minority shareholders (if any) have the reasonable expectation that the state shall not let the companies it has stakes in go bankrupt. Hence, state-controlled firms may take more risks or engage in price wars without having to face all the consequences;
- State-controlled firms have a greater ability to capture governmental officials and other regulators, not just because of their obvious proximity, but also because the government itself has a vested interest in maximising the profits of its firms;
- Even if state-controlled firms do not abuse their capture potential, competitors may well fear they will do so in the future, and hence be less willing to take risks, effectively reducing competitive pressures to the detriment of consumer welfare.

Even worse, after the COVID-19 crisis of 2020–2021 and the energy crisis of 2022, many EU governments have partly or fully re-nationalised companies operating in the energy sector, such as in the case of Germany's Uniper, or the takeover of smaller companies by Poland's Orlen.

On the contrary, if competition has to be restored in energy markets, national governments should consider privatising state-controlled firms and immediately stop further nationalisation.

Decarbonisation

On top of pursuing market opening and integration, the EU has ambitious decarbonisation goals, the most important ones being the reduction of greenhouse gas (GHG) emissions by 55 per cent below 1990 levels in 2030 (as of 2022, emissions were around 27 per cent below 1990 levels) and carbon neutrality by 2050.

To achieve these goals, the EU has adopted (or requested member states to adopt) a number of provisions, aimed at incentivising clean(er) technologies and increasing the cost of polluting activities. Two stand out: the ETS and the taxonomy for sustainable investments. The ETS is a cap-and-trade scheme, under which undertakings covered by the system (i.e., around 10,000 installations in the energy sector, manufacturing, and air transportation) are requested each year to surrender a number of 'emissions allowances' equal to the actual emissions they have produced. Most allowances are auctioned by the EU, and a few are distributed for free to energy-intensive, trade-exposed sectors, where firms might be incentivised to delocalise to offset the cost of carbon. Companies may also trade allowances. Since the total number of allowances is limited by a cap (declining over time), the system is designed so that those with a relatively low marginal abatement cost are incentivised to cut their own emissions to sell allowances to companies with greater abatement costs. Under the system, the goal of reducing total emissions by a certain amount shall be achieved by allocating emissions cuts where it costs the least, thereby minimising the overall cost of reducing emissions..

One defining feature of the ETS – as well as of any other cap-and-trade scheme – is that it is technology-neutral: it does not matter how emissions cuts are achieved, as long as they are made. Policy-makers and regulators do not make any explicit decisions regarding how firms should achieve their goals: it does not matter whether firms do so by employing more fuel-efficient equipment, substituting fossil fuels with renewable energies, or adapting their productive processes. It does not even matter who actually reduces emissions. In fact, under the scheme, it is possible that one company could increase its emissions, as long as another offsets this by cutting its own.

There is a consensus among economists that technology-neutral policies, such as cap-and-trade schemes or carbon taxes that place costs upon emitters, thereby incentivising them to reduce emissions, are the most cost-effective means of reducing emissions (Nordhaus 2018). These

policies also a have further advantage: they encourage innovation, insofar as any new technology that results in lower emissions implies a reduction in production costs and potentially a competitive edge for those who adopt it first. Cap-and-trade systems, in particular, have had extensive diffusion and are well understood and studied (Schmalensee and Stavins 2017). The EU's ETS is widely regarded as a success story, despite several revisions that have happened and are still occurring.[4]

The taxonomy of sustainable investments is also an attempt to channel both public and private financing towards activities that result in a low environmental footprint. The taxonomy is intended to facilitate the process of investors and firms disclosing the environmental and climate implications of their activities. The topic of disclosure, especially if mandatory, is far from settled: while central banks and other financial institutions are becoming increasingly interested in the long-term financial risks that are potentially connected to climate change, some scholars argue that climate policy should be run by governments, not by independent regulators, and that climate change does not pose significant risks within a timeframe that is relevant for banking and financial regulation (see, for example, Cochrane 2020). That said, the taxonomy aims to identify a set of objective criteria under which different technologies should be classified according to their environmental impacts. The taxonomy,[5] however, does not pick technologies according to political prejudices, but evaluates their expected features and impacts. While the concrete decisions taken in the context of the taxonomy may be questionable, at least in principle the process is outcome oriented, and not based on a predetermined decision about which technologies might be better able to garner politicians' support.

Energy taxation and subsidisation

Unfortunately, the EU's climate policy is not limited to the ETS, the taxonomy, and similar tools that are all predicated upon technology neutrality. Along with the binding targets concerning emissions reductions, the EU has also introduced binding targets related to renewable energies and energy efficiency: renewable energies shall cover at least 42.5 per cent of final energy consumption in the EU by 2030 (but with an aim to reach 45 per

4 'EU Emissions Trading System (EU ETS)', *European Commission*, n.d. (https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en).

5 'EU taxonomy for sustainable activities', *European Commission*, n.d. (https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en).

cent),[6] whereas total energy consumption shall decrease by at least 11.7 per cent below the business-as-usual scenario by the same year.[7] A number of further micro-regulations have been introduced or are in the process of being introduced, such as specific plans for solar power,[8] hydrogen,[9] wind power,[10] EVs,[11] and green homes.[12] Besides, trade duties and other limitations are being proposed for solar panels, batteries, and other energy transition–related goods, mainly imported from China, while a full-fledged border carbon tariff is in the process being enforced[13] (see also Epicenter 2020).

The explicit preference for renewable energies and, to some extent, energy efficiency, over other low-carbon energy sources is emphatically not part of the EU's environmental policy. This policy should focus on cutting CO_2 emissions or other pollutants, regardless of the actual tools or technologies employed. On the contrary, obliging member states to adopt specific targets for renewables and energy efficiency means that even if better or cheaper technologies exist, the politically preferred ones shall be prioritised. Table 4 shows how different technologies – that deliver the same environmental benefit of displacing carbon-intensive electricity – are treated differently in the member states. The only country that provides the same level of support to all renewable technologies is Poland, with a weighted average support of £42.03/MWh. All remaining member states have previously provided, and still offer, differentiated support for renewable technologies (Table 5). If subsidies are technology-based rather than

6 'Renewable energy targets', *European Commission*, n.d. (https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-targets_en).
7 'Energy efficiency targets', *European Commission*, n.d. (https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-targets_en).
8 'Solar energy', *European Commission*, n.d. (https://energy.ec.europa.eu/topics/renewable-energy/solar-energy_en).
9 'Hydrogen', *European Commission*, n.d. (https://energy.ec.europa.eu/topics/energy-systems-integration/hydrogen_en).
10 'Press remarks by executive vice-president Šefčovič and commissioners Simson and Hoekstra on the EU wind power package and the state of the energy union 2023', *European Commission*, 24 October 2023 (https://ec.europa.eu/commission/presscorner/detail/en/speech_23_5267).
11 'Zero emission vehicles: First 'fit for 55' deal will end the sale of new CO2 emitting cars in Europe by 2035', *European Commission*, 28 October 2023 (https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6462).
12 'Energy performance of buildings: Climate neutrality by 2050', *European Parliament*, 9 February 2023 (https://www.europarl.europa.eu/news/it/press-room/20230206IPR72112/energy-performance-of-buildings-climate-neutrality-by-2050).
13 'Carbon border adjustment mechanism', *European Commission*, n.d. (https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en).

performance-based, it follows that more of the tax-payers' money are poured into technologies that are relatively more costly rather than in technologies that are relatively more efficient when it comes to reducing carbon emissions or displacing carbon-intensive technologies. To put it otherwise, this means that the same amount of carbon might have been abated at a lower cost or that the same amount of money might have been used to reduce emissions more. This makes no economic sense and should be revised immediately.

Table 4. Weighted average support level in 2021 (£/MWh) for some renewable technologies

Member state	Bioenergy	Hydropower	Solar	Wind (onshore)	Wind (offshore)
Czech Rep.	91.04	69.70	511.48	71.20	–
France	81.85	0.05	174.48	5.67	–
Germany	114.18	56.59	227.68	27.22	94.06
Greece	–	–59.31*	115.87	–146.71*	–
Italy	161.11	84.49	287.65	81.68	–
Poland	42.03	42.03	42.03	42.03	–
Romania	NA	NA	NA	NA	NA
Spain	59.30	34.36	288.88	33.73	–

Source: CEER

* The value is negative due to the exceptionally high wholesale power prices in 2021.

Table 5. Support level for new installations in 2020 (producing energy in 2021) (£/MWh) for some renewable technologies

Member state	Bioenergy	Hydropower	Solar	Wind (onshore)	Wind (offshore)
Czech Rep.	–	58.05	–	–	–
France	61.24	20.65	89.27	–5.82*	–
Germany	–	–	–	–	–
Greece	33.94	–30.48*	160.59	–32.93*	–
Italy	109.54	26.96	–12.29*	–29.61*	–
Poland	–	–	–	–	–
Romania	NA	NA	NA	NA	NA
Spain	–	–	–	–	–

Source: CEER

* The value is negative due to the exceptionally high wholesale power prices in 2021.

The same differential treatment applies to energy taxation. Carbon taxes have been widely viewed as effective in promoting investments in cleaner sources of energy because they increase the cost of producing emissions and implicitly support low-carbon sources. A critical feature of carbon taxes is that, while penalising carbon-based energies, they do not specifically reward low-carbon sources. Therefore, the specific investments that will take place because of carbon taxes depends on the relative cost of alternative sources of energy, just as under a cap-and-trade scheme. Most countries in Europe do not have explicit carbon taxes, although some do. All of them, though, impose taxes on various sources of energy or related technologies. This translates into an implicit carbon cost, which can be estimated. Based on 2018 data, Booth and Stagnaro (2022) show that the treatment of a tonne of CO_2 depends on its source, the use thereof, or even the subjective nature of the user. For example, on average, in the EU, a tonne of CO_2 was implicitly taxed less than £10 if emitted from burning coal, more than £30 if emitted from natural gas, and above £90 if emitted due to the use of oil products. The figures have changed since 2018, mainly because the value of ETS emissions allowances has skyrocketed, but this differential treatment remains and has no environmental justification.

Instead of providing direct financial support to the preferred technologies, EU member states might support renewable and other low-carbon energy sources, both directly and indirectly. Forms of direct – but technologically neutral – support may include reducing red tape (as discussed earlier), increasing depreciation allowances (as in Germany), and promoting long-term power purchasing agreements (PPAs), as in Spain. Hikes in the depreciation allowances have often been used to support investment in capital goods (for example, in France or Italy), with positive effects on corporate investments (Albrecht, 2023). Germany, though, has used it as a specific means to support renewable energies, hence improving the financial viability of investments in clean technologies, while not favouring any specific technology and, indeed, potentially even acknowledging technologies that have not yet been invented.

PPAs are also meaningful instruments of support for renewables. One problem renewable investors face is how to match the cost structure of these technologies (whose costs are concentrated in the construction phase) given the volatility of power prices. If investors find a buyer willing to commit to buying a certain quantity of energy, for a given period (say, ten years), at a given price, then the investment becomes easier to finance. But this entails a number of risks, including the counterpart risk, i.e., the risk that the counterpart (either the originator or the offtaker of the renewable energy) may fail in the future. Spain has decided to reduce this risk by introducing public guarantees that back PPAs on certain conditions. Again, this support is not linked to specific technologies.

Nuclear power

The explicit preference for renewable energies implies that the actual mix of technologies used to reduce carbon emissions is not necessarily the least costly combination. This is as much an economic problem as it is an environmental one. The fact that emissions are cut at a cost of, say, £100/tonne CO_2 while other technologies would have allowed for the same at a cost of, say, £50/tonne CO_2 means that society has paid double for the environmental benefit it has 'bought' through the policy. It also means that better use of the available technologies might have ensured twice the emissions cuts for the same cost.

The case of awarding the same incentive regardless of the type of renewable – or of adopting support schemes that do not discriminate between technologies as long as they deliver the same environmental benefits –

does not hold for renewables alone: it also applies to other technologies that might contribute to reducing carbon intensity in our societies; for example, carbon capture and sequestration (CCS) and nuclear power. CCS may be employed to reduce emissions from specific processes where fossil fuels cannot easily be replaced for technical or economic reasons, such as in the transportation sector and heavy industry (the 'hard to abate' industries). This is openly recognised by the EU, which has even started on elaborating an ad-hoc strategy.[14] Unfortunately, some member states are either implicitly or explicitly sceptical of CCS. Still, regulatory obstacles should be phased out rapidly.

The situation is more complex – and more paradoxical – with nuclear power. The data on the carbon intensity of electricity generation clearly shows that the least carbon-intensive countries in the EU, such as France, Sweden, and Finland, all rely on nuclear power to a large extent. In the process of elaborating the taxonomy of sustainable investments, the European Commission tasked its Joint Research Center with drafting a report on the environmental implications of nuclear power. The report concludes that 'The analyses did not reveal any science-based evidence that nuclear energy does more harm to human health or to the environment than other electricity production technologies already included in the taxonomy as activities supporting climate change mitigation' and that 'average lifecycle GHG emissions determined for electricity production from nuclear energy are comparable to the values characteristic to hydropower and wind' (Abousahl et al. 2021: 5–6). Other studies by the Intergovernmental Panel on Climate Change (IPCC 2022) and the International Energy Agency (IEA 2022) reach similar conclusions.

There is a virtually universal consensus among experts that nuclear power might contribute significantly to the reduction of carbon emissions. What is not obvious is its financial viability, as – unlike with renewable energies – the cost of new nuclear installations has increased over time, at least in the EU and the United States (US) (IEA and NEA 2020). There may be many causes for this – which are well beyond the scope of this chapter – but two are worth mentioning. On one hand, in the past few decades, only a small number of reactors have been built in the West: the capacity of the nuclear industry to build and maintain new power plants has declined and the availability of specialised personnel has also become scarce. On the other hand, the cost of nuclear power strongly depends on the cost

14 'Carbon capture, storage and utilisation', *European Commission*, n.d. (https://energy.ec.europa.eu/topics/oil-gas-and-coal/carbon-capture-storage-and-utilisation_en).

of building new reactors. Hostile public opinion in several member states also increases the cost of capital because it creates a perception of greater political risk, which is especially relevant to assets whose technical life is well beyond 40 years. Finally, ever-stricter regulations that often apply to new and existing reactors have sent the cost of atomic energy upwards. Table 6 lists the existing and planned reactors in the member states.

Table 6. Nuclear power in the member states

Member state	Existing reactors	Reactors under construction	Reactors planned	Reactors proposed
Czech Rep.	6 (3,943 MW)	–	1 (1,200 MW)	3 (3,600 MW)
France	56 (61,370 MW)	1 (1,630 MW)	–	6 (9,900 MW)
Germany	–	–	–	–
Greece	–	–	–	–
Italy	–	–	–	–
Poland	–	–	3 (3,750 MW)	3 (3,000 MW)
Romania	2 (1,300 MW)	–	2 (1,440 MW)	1 (720 MW)
Spain	7 (7,123 MW)	–	–	–

Source: IAEA-PRIS and World Nuclear Association

If fighting climate change is a real priority in the EU, then nuclear power should be allowed not just in the member states that already accept it, but also elsewhere. Countries such as Germany and Italy, which used to have nuclear power, have phased it out, effectively increasing their own emissions. Other countries, such as France and the Czech Republic, exemplify a best practice insofar as they allow investments in new nuclear power plants, both of old design and of new conception (such as the small modular reactors).

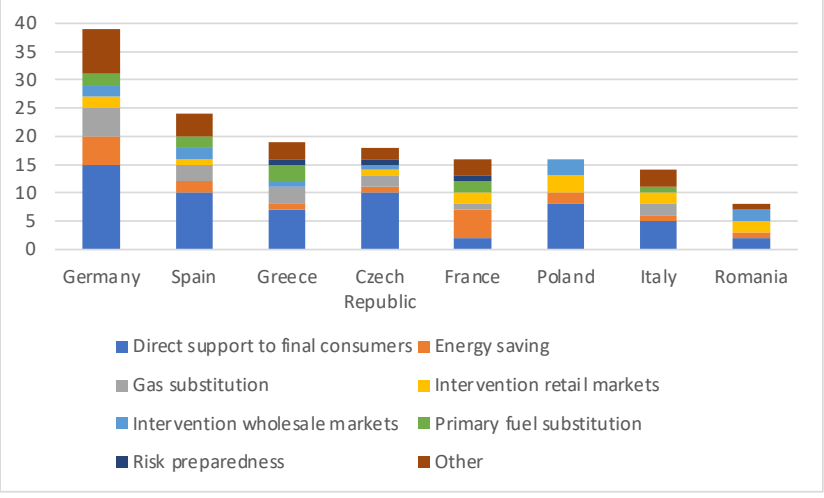
Energy security and emergency measures

During the energy crisis, the EU and its member states introduced a number of extraordinary measures that were intended to support households and businesses in tackling surging prices. ACER (2023) has identified seven main categories of intervention:

1. Primary fuel supply;
2. Gas substitution;
3. Energy saving;
4. Risk preparedness;
5. Direct support to final consumers;
6. Intervention in the retail markets;
7. Intervention in the wholesale markets.

Figure 1 shows the extent to which member states have resorted to these measures.

Figure 1. Emergency measures by type in the member states



Source: ACER

Some measures, good or bad, were temporary: this was the case for many fiscal discounts or monetary transfers, which required considerable resources. The budgetary cost of these temporary measures ranged from Poland's 2.2 per cent of the GDP (€12.4 billion) to Italy's 5.2 per cent of the GDP (92.7 billion).[15] Some temporary reductions in energy taxes might even be regarded as positive, insofar as they are i) made permanent and ii) financed by spending cuts rather than by increasing other taxes or public borrowings. Other measures, temporary or not, might also be regarded as useful in increasing energy security in member states, such as provisions concerning risk preparedness.

Other measures, however – particularly with regard to interventions in the wholesale or retail markets – raised more problems than they fixed. These include price caps or price freezes in retail markets (in Germany, the Czech Republic, France, Poland, and Romania), the re-introduction or prorogation of price regulation (in Italy), price caps and other distortions in wholesale electricity markets (in Greece, France, Czech Republic, and Romania), and the EU-wide price cap on natural gas. These measures have already been phased out in some cases, but in others, they remain in force: they should thus be eliminated as soon as possible.

15 'National fiscal policy responses to the energy crisis', *Bruegel*, 26 June 2023 (https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices).

Conclusion

Based on the available evidence and experiences so far with energy and climate policy in the EU, it is possible to draw up some policy implications. In simple terms, energy and climate policies in the EU and member states should be reformed so that, on the one hand, they restore or introduce competition at both the wholesale and retail levels, and, on the other, makes emissions reduction the main mission of environmental policy, by incentivising the shift towards low-carbon fuels without picking winners and losers among the preferred technologies.

Member states should consider the following policy suggestions:

- Streamline and simplify licensing and permitting procedures for cleaner technologies, including, but not limited to, renewable energies, CCS, and natural gas infrastructures;
- With specific regard to renewable technologies, designate specific areas where they may be developed with no or reduced environmental impact assessments;
- Remove any obstacles to or bans on introducing nuclear power;
- Privatise state-controlled firms and, if needed, break up incumbent, state-controlled firms;
- Phase out technology-specific subsidies and homogenise them so that the environmental benefits are awarded the same incentive, regardless of the technologies employed, preferably in the form of depreciation premiums or state guarantees to PPAs;
- Revise energy taxation to reflect the actual environmental damage;
- Remove any form of price regulation at the retail level on electricity and natural gas;

- Swiftly remove any remaining emergency measures, especially ‘temporary’ interventions in the wholesale or retail markets of electricity and natural gas.

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Chapter 2: A better framework for soft drug and alternative nicotine consumption

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Summary

- Drug prohibition leads to significant social costs, including increased organised crime, violence and corruption, and increased pressure on the police and the judiciary, which are already overstretched.
- Also, drug prohibition results in an increase in government spending and a depletion of public finances due to the resultant need for law enforcement and criminal justice resources.
- Global best practices with regard to drug policy involve decriminalisation, as seen in countries such as the Netherlands and Portugal. Decriminalisation reduces incarceration rates and lowers the burden on the criminal justice system. In Portugal, it has also led to a significant reduction in the HIV transmission rate among drug users and a decrease in the overall social costs related to drug use.
- Nicotine harm reduction involves the promotion of less-risky alternatives to traditional smoking, such as electronic cigarettes and heated tobacco products (HTPs). These innovative products significantly reduce the health risks associated with smoking by eliminating the production of harmful substances associated with combustion.
- Best practices from countries such as the United Kingdom and Sweden show that reduced-risk nicotine products have helped lower smoking prevalence and related health risks.

- Reduced-risk nicotine products have been widely accepted by consumers and have become an alternative to traditional smoking.
- Encouraging the adoption of reduced-risk nicotine products will help align consumer preferences with public health objectives, potentially saving millions of lives by reducing smoking-related deaths.

Introduction

The widening reach of regulations that seek to control human behaviour is worrying. The aim is no longer to combat behaviours that create hazards for third parties – for example, drunk driving, which is a danger to others – but to protect consumers from the risks they pose themselves. The approach has become excessively precautionary, and the aim is not to combat systemic risks, which need to be contained because of their multiplicative nature, but risks in general.

However, behavioural regulations and taxation do not systematically produce the desired effects. We know that prohibition, regulation, and taxation are likely to increase the consumption of services such as the police and courts and lead to the growth of a parallel market, because demand for prohibited substances does not simply disappear. What's more, interventionism can, in certain cases, encourage or counterproductively delay substitution phenomena. Policies aimed at changing behaviour must consider the consequences of prohibition and the provision of good substitutes if they are to succeed. They must avoid the pitfall of being exclusively penalising. The best behavioural strategy is one that prioritises investing in solid substitutes, one example being smokeless tobacco products.

Drug harm reduction

Broadly, prohibition along with the criminalisation of drugs results in the disappearance of legal supply networks. Prohibition requires the deployment of additional means to enforce bans. The growth of illicit markets would, therefore, increasingly 'consume' resources such as the police and courts – resources that could be utilised in other much-needed scenarios. Prohibition also leads to an increase in government spending and a depletion of public finances. The entire population also faces the risk of suffering from a rise in organised crime, along with the violence and corruption associated with it. Therefore, it is important to define drugs more precisely, such that a distinction is made between soft drugs and hard drugs. This would allow the formulation of more efficient public policies aligning economic, liberty and health issues.

The need for a better regulatory framework of drugs

According to Europol,[16] 39 per cent of the 30 billion euros spent in the EU on the purchase of drugs in 2019 was for procuring cannabis, the most popular soft drug in the EU. In 2022, in Greece, approximately 60 per cent of drug seizures involved cannabis, while the remaining 40 per cent concerned all other drug categories.

In the Netherlands, there is a clear definition[17] that notes that soft drugs are less detrimental to health compared to hard drugs; this does not mean that soft drugs are considered to be harmless substances but, rather, that the risks they pose are less serious than the risks associated with the use of hard drugs. Soft drugs include hashish, marijuana, sleeping pills, and hallucinogens.

A systematic literature review by Janik et al. (2017), which relied on 132 empirical studies as well as the definitions provided by the American Psychology Association,[18] suggests that 'soft drugs' are broadly defined

16 'Cannabis', Europol (https://www.europol.europa.eu/crime-areas/drug-trafficking/cannabis).

17 'Soft drugs are less dangerous to health than hard drugs. Soft drugs are not harmless substances, but the risks are less serious than the risks associated with hard drugs. They include hash, marijuana, sleeping pills and sedatives. See 'How does the law distinguish between soft and hard drugs?', Government of the Netherlands (https://www.government.nl/topics/drugs/how-does-the-law-distinguish-between-soft-and-hard-drugs).

18 Definitions from the mental health classifications of the diagnostic manuals ICD-10 (*International Classification of Diseases*, 10th edition) and DSM-5 (*Diagnostic and Statistical Manual of Mental Disorders*, 5th edition).

as drug substances[19] that have the least possible individual-, social-, legal- and health-related adverse effects.

Unfortunately, in most European countries, the definitions used by the regulatory framework for the use and distribution of drugs are so broad, that these categories may be considered relatively undefined. Under this framework, simple drug possession may potentially be charged as a drug trafficking offence. Therefore, better definitions could be useful in the implementation of decriminalisation.

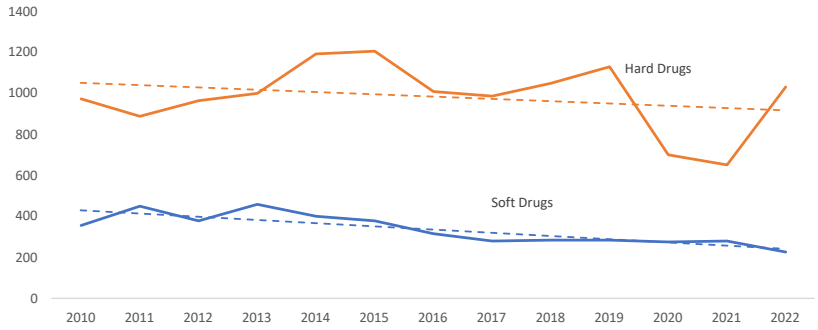
19 It should be noted that apart from cannabis and related synthetic derivatives, light drugs often also include caffeine, alcohol, nicotine, and antidepressants (Janik et al. 2017; Council of the European Union 2021).

Decriminalisation: social and economic benefits

The case of the Netherlands

In the Netherlands, decriminalisation of soft drugs has reduced both soft- and hard-drug-related crimes (Figure 1) as well as HIV transmission among heroin users (from 15 cases in 2006 to just 2 in 2017; see Figure 2).

Figure 1: Number of recorded cases of soft- and hard-drug-related offences in Amsterdam



Source: Statista[20]

20 'Number of registered cases of drug offenses in Amsterdam from 2010 to 2022', Statista, 2 Mary 2023 (https://www.statista.com/statistics/1287241/amsterdam-cases-of-drug-offences/).

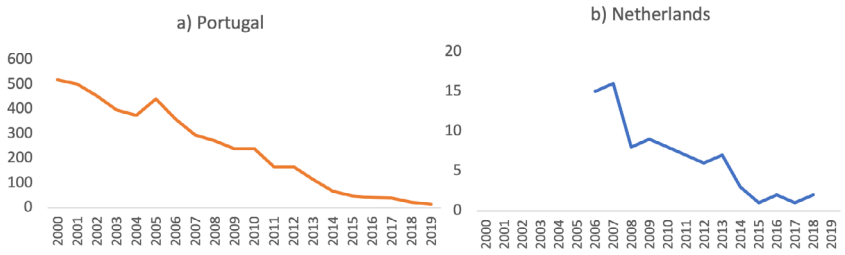
On the other hand, it has been noted that the number of addicted drug users is increasing, and soft drugs are considered to be a gateway to harder drugs, especially at younger ages, where approximately 18 per cent of people aged 15 to 34 years use cannabis frequently (European Monitoring Centre for Drugs and Drug Addiction 2020). Finally, drug-related criminal activities have increased in many cases, and society at large is often divided on issues of drug policy (van Santen et al. 2021).

The case of Portugal

In 2001, Portugal decided to reform its laws related to drug possession and use, which were still illegal but were not considered criminal offences anymore. As a result, there is an institutional tolerance for the use and possession of small amounts of soft drugs, while the penalties for the possession of larger quantities of drugs are administrative rather than criminal.

As a result, the pressure on the prison system has eased significantly, with the proportion of people incarcerated for drug-related cases falling from 40 per cent to 15 per cent. Also, as in the case of the Netherlands, Portugal has seen a dramatic decrease in HIV transmission among heroin users (Slade 2021).

Figure 2: Cases of HIV infection caused by intravenous drug use after drug deregulation policies were put into effect in Portugal and the Netherlands



Source: Slade (2021) and European Monitoring Centre for Drugs and Drug Addiction (2020).

According to Gonçalves, Lourenço and Silva (2015), the approval of the relevant 'Portuguese National Strategy for the Fight Against Drugs' led to a decrease in the social cost of drugs by 12 per cent five years later and by 18 per cent eleven years later. This decrease was largely due to the reduced financial expenditure incurred by the judicial and prison systems; another important determining factor was that even though drug addiction costs increased, there was a significant overall reduction in health-related costs due to drug use (Gonçalves, Lourenço and Silva 2015).

Greenwald (2009) claimed that deregulation in Portugal was supported by the citizens and suggested that other countries could adopt this practice. A more recent analysis reports that there has been a slight increase in adult drug use in Portugal since the reform – from 8 per cent in 2001 to 13 per cent in 2022.[21] Even so, drug use rates in Portugal remain low today compared to the EU average, while drug addiction is reported to affect only 0.7 per cent of the adult population, which is one of the lowest rates in the EU. Singer (2023) further argues that the observed increase in opiate use is not due to decriminalisation; rather, it is due to the over-prescription of pharmaceutical opiates in recent years, coupled with the fact that drug use increased worldwide during the Covid-19 pandemic lockdowns. Therefore, the relevant reform should be evaluated on the basis of the general framework in which it operates.

21 'My Washington Post letter to the editor about Portugal's drug decriminalization', CATO Institute, 12 July 2023 (https://www.cato.org/blog/washington-post-letter-editor-about-portugals-drug-decriminalization).

Nicotine harm reduction

For more than a century, users have inhaled smoke from cigarettes – a high-risk product (HRP) – to obtain their nicotine. But through innovation, reduced-risk products (RRPs) have the potential to end their 'reign'. When it comes to so-called 'vice' behaviours – that is, risky for those who practice it but generally not for others[22] – the authorities have often chosen a precautionary approach consisting of regulating, taxing, or even banning the products involved. But in the absence of good substitutes, these public policies have mixed results.

For more than a decade, real substitutes have been available for tobacco, with likely lower health risks. While France has made fewer bad choices in this area than many other European countries, the question remains as to whether our authorities will choose to mitigate risks rather than pursue repeated, authoritarian, and relatively ineffective attempts to eliminate them. Tobacco risk mitigation is now possible through innovative 'combustion-free, smoke-free' products. Although they are not 'zero risk' and long-term epidemiological data on their use is not available, they have reduced cigarette consumption and have the potential to change the pattern of nicotine consumption in the future, to the benefit of smokers and public health. The best behavioural strategy would be to focus on investing in solid substitutes that could, according to British expert Nutt (2022), prove to have 'the greatest health impact of any intervention in history'.

22 Passive smoking regulations are designed to limit the risk of contagion, but this does not justify the arsenal of regulations in place in most countries.

Tobacco combustion: a major source of risk

Nicotine use dates back millennia, but it should be noted that it consisted only of chewing tobacco leaves. This mode of consumption was the most widespread in USA until 1918 (Duke et al. 2022). But a technological innovation of the late nineteenth century – the cigarette rolling machine – allowed productivity gains and a drastic reduction in production costs (costs halved in two decades) (Sweanor 2014). Cigarettes have thus been, and remain to this day, the predominant mode of nicotine consumption. According to the World Health Organization (WHO 2021), about one billion people smoked tobacco in 2020 worldwide and about as many will still smoke in 2025. In metropolitan France, the number of people who smoke is nearly 14.7 million.[23]

However, cigarettes have been shown to be an HRP because the combustion of tobacco gives rise to the production of toxic substances that are then inhaled by smokers. World-renowned experts in public health and tobacco harm reduction have pointed this out in a communication to the US Supreme Court in 2023 (Abrams et al. 2023):

> Almost all the harm caused by smoking arises from inhaling toxic products of combustion (tar and toxic gases that constitute the smoke from burning tobacco leaf.

The main innovation of the last decade has been to eliminate combustion, thus minimising the risks of nicotine products.

A wide range of new, innovative products

A whole range of new products has been made possible thanks to the development of various other innovations such as battery miniaturisation. The various 'smoke-free' products can be grouped into the following categories:

- *The electronic cigarette.* It operates by heating liquid containing nicotine. The modern version was invented in 2003 by a Chinese pharmacist, Hon Lik (National Academies of Sciences, Engineering, and Medicine 2018); it became very popular, especially in France and Europe, in the early 2010s.

23 'Innovation and its enemies: understanding the war on vaping'. *Tobacco Reporter*, 1 March 2021 (https://tobaccoreporter.com/2021/03/01/innovation-and-its-enemies/).

- *Heated tobacco.* These products produce aerosols by heating tobacco leaves; they have been gaining market share since the mid-2010s, particularly in Japan.
- *Hybrid products.* They heat liquid (such as electronic cigarettes) and also indirectly heat tobacco (such as HTPs).
- *Tobacco-free synthetic nicotine packets*. These could be described as 'snus 2.0' because they deliver nicotine orally, similar to snus, an old oral tobacco product 'without combustion, without smoke', which is generally consumed by being placed in the mouth (behind the upper lip).

Finally, we must add to the list above snus itself. It has seen a resurgence of interest among smokers in some countries, similar to what happened in Sweden.

What these new products have in common – despite the different technologies used – is that they do not burn tobacco. This lack of combustion, and therefore of tar production, is what makes these products highly desirable from the point of view of risk reduction (Polosa 2021) when compared to combustible products, such as traditional cigarettes.

The Academy of Science, Engineering and Medicine in the United States analysed the scientific literature, including more than 800 peer-reviewed articles, dealing with electronic cigarettes. It reached the following consensus in its 2018 report (National Academies of Sciences, Engineering, and Medicine 2018: X, 1–6):

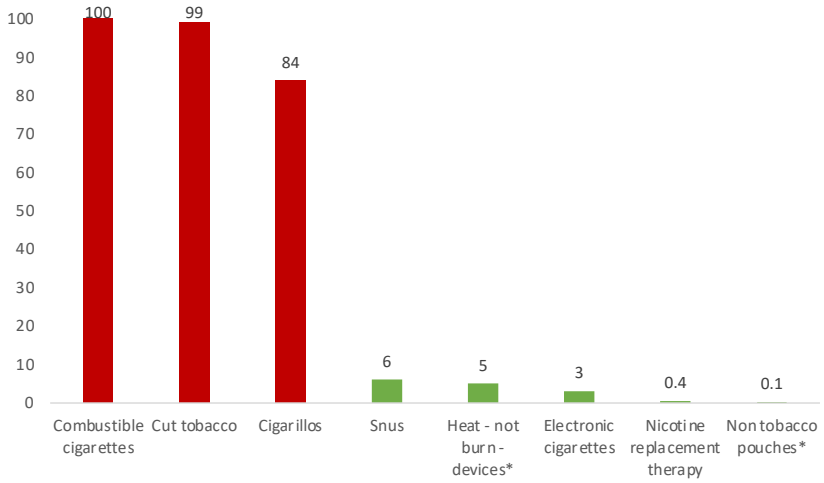
> Laboratory tests of e-cigarette ingredients, in vitro toxicological tests, and short-term human studies suggest that e-cigarettes are likely to be far less harmful than combustible tobacco cigarettes. (…) Taken together, the evidence (…) suggests that e-cigarette aerosol contains fewer numbers and lower levels of toxicants than smoke from combustible tobacco cigarettes.

Similarly, a 2022 systematic review, commissioned by the United Kingdom's Office for Health Improvement and Disparities, describes the risks of vaping in these terms (McNeill et al. 2022):

> [V]aping poses only a small fraction of the risks of smoking. As we have also previously stated and reiterate, this does not mean vaping is risk-free, particularly for people who have never smoked.

A quantitative assessment of the health risks of different nicotine products, based on the analysis of 123 studies, illustrates the potential of new smoke-free products (see Figure 3).

Figure 3: Risk levels of different nicotine products: HRPs (combustible, in red) vs RRPs 'combustion free and smoke free' (in green)



Note: The risk of products with the symbol * is based solely on emitted/contained toxin data (lack of long-term epidemiological data).

Source: Murkett, Rugh and Ding (2022)

RRPs (in green), without being 'zero risk', are generally considered substantially less risky than smoked tobacco (in red), with only between 0.1 per cent and 6 per cent of the risks of traditional cigarettes. In fact, some RRPs – such as tobacco-free nicotine pouches – are considered to have lower levels of risk than nicotine replacement treatments (such as patches or gums) dispensed in pharmacies and reimbursed by Social Security in France (on prescription).[24] Many independent studies have found an improvement in the health status of smokers once they substitute cigarettes with RRPs, whether they are snus (Clarke et al. 2019), electronic cigarettes (Christensen et al. 2021), heated tobacco (Polosa et al. 2021), or nicotine pouches (Azzopardi et al. 2023).

24 'Arrêt du tabac: quelle prise en charge pour les substituts nicotiniques?', L' Assurance Maladie, 26 October 2022 (https://www.ameli.fr/assure/remboursements/rembourse/medicaments-vaccins-dispositifs-medicaux/prise-charge-substituts-nicotiniques).

Combustion- and smoke-free tobacco substitutes: accepted by consumers

Any innovative product must be accepted by consumers if it is to be a real alternative. The so-called RRPs have, in fact, led many consumers to give up cigarettes, and many never adopted the practice at all. International experience shows that RRPs are substitutes for smoked tobacco, which can, if the authorities do not prevent their use, replace cigarettes for many consumers. The cases of Sweden (snus), Japan (heated tobacco), the United Kingdom and France (electronic cigarettes) are particularly relevant in this regard, where it has been shown that instead of being a 'gateway' to traditional combustible cigarettes, RRPs are actually a real 'way out'.

Snus and the Swedish example

Sweden is the only country in the European Union that has not banned snus, a product historically consumed mainly by men. Since the early 1990s, the product has grown in popularity. Snus has gradually replaced smoked tobacco. Sweden is thus on the verge of becoming the first 'smoke-free' country in the EU, according to the definition accepted by many countries (including Sweden), with less than 5 per cent of the population smoking cigarettes (6 per cent of Swedes smoked cigarettes daily in 2021)[25] (Public Health Agency of Sweden 2022).

A study analysing the Swedish experience concludes as follows (Clarke et al. 2019):

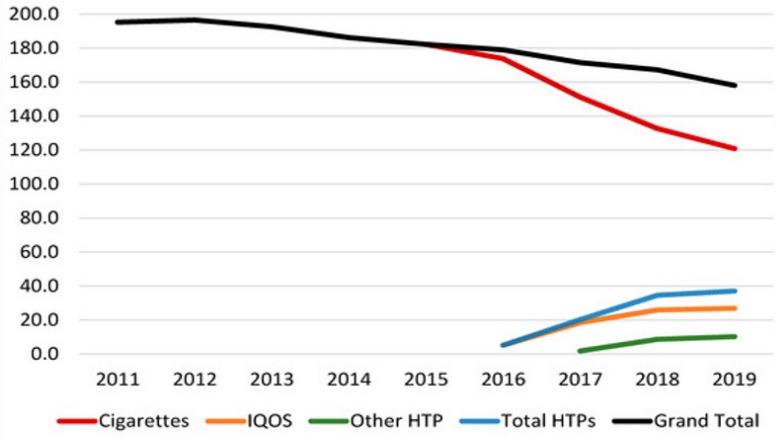
> [S]nus appears to be a viable alternative to smoking tobacco, is acceptable to consumers and does not act as a gateway product to smoking cigarettes. Snus should therefore be regarded as an RRP relative to cigarettes. (…) Snus as an alternative to cigarettes has the potential to deliver enormous harm reduction benefits as demonstrated in Sweden, particularly in reducing the incidence of lung cancer and cardiovascular disease of which smoking is a known cause, where the product can be marketed and sold to adult smokers widely.

25 'Tobacco and nicotine products', Public Health Agency of Sweden, 8 March 2022 (https://www.folkhalsomyndigheten.se/the-public-health-agency-of-sweden/living-conditions-and-lifestyle/andtg/tobacco/).

Heated tobacco in Japan

Several competing HTPs have been growing rapidly in popularity in Japan since the mid-2010s, to the point where they accounted for about 85 per cent of global sales of these products in 2018 (Cummings, Nahhas and Sweanor 2020). The dynamics of cigarette sales, on the one hand, and of sales of HTPs (such as IQOS), on the other, reflect a substitution of the former by the latter – so much so that, as one study observes, '*the accelerated decline in cigarette only sales in Japan since 2016 corresponds to the introduction and growth in the sales of HTPs'* (Cummings et al, 2020:1) (shown in Figure 4).

Figure 4: Sales of smoked vs heated tobacco products in Japan, 2011–2019.



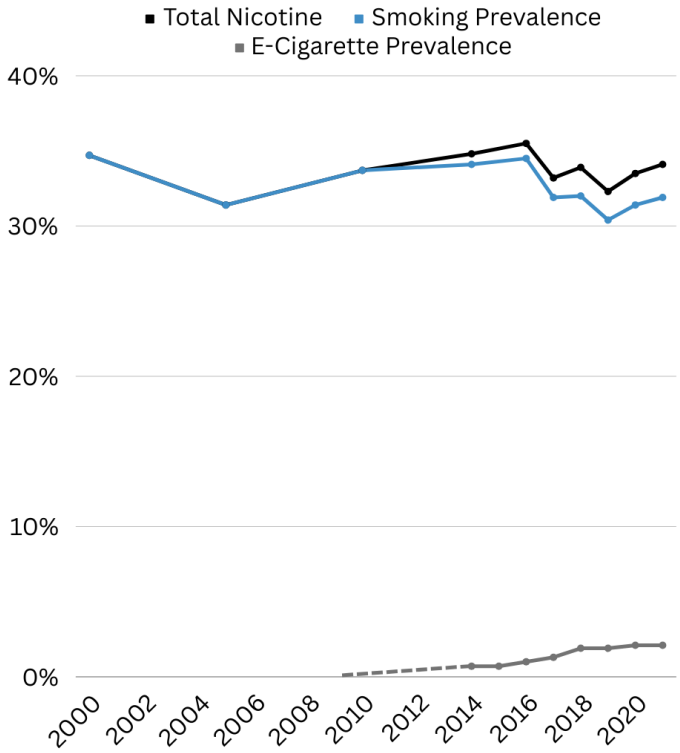
Source: Cummings, Nahhas and Sweanor (2020:3).

Electronic cigarettes: the cases of the United Kingdom and France

The British authorities are among the very few in the world to have actively promoted electronic cigarettes to reduce the harms of smoking. The prevalence of smoking reduced substantially over the decade 2011–2021, from 20.2 per cent to 13.3 per cent, with the UK Office for Statistics pointing out that '[v]aping devices such as e-cigarettes have played a major role in the decrease in smoking prevalence in the UK' (Office for National Statistics 2021).

A similar dynamic can be observed in France, where, although the role of vaping is not as well recognised as across the Channel, the authorities have adopted a less cautious and much more tolerant attitude towards it compared to cigarettes. The 'unprecedented decrease between 2016 and 2019'[26] in the prevalence of smoked tobacco (stabilising between 2019 and 2021) coincides with the increase in e-cigarette use (Figure 5).

Figure 5: Prevalence of smoked tobacco and e-cigarette use in France*, 2000–2021**



Notes: *Percentage of 15- to 75-year-olds (18- to 75-year-olds after 2014). **Dotted lines denote that there is no data on e-cigarette use (introduced in the early 2010s but first data collected only in 2014).

Source: Pasquereau et al. (2022a; 2022b); authors' calculations

26 'Tobacco: data', Public Health France, 16 July 2023 (https://www.santepubliquefrance.fr/determinants-de-sante/tabac/donnees/#tabs).

However, the data shows that the total prevalence of nicotine use has remained relatively stable over the past two decades. As has happened in the United Kingdom, smokers in France have at least partly substituted smoked tobacco with electronic cigarettes. Among ex-smokers surveyed in 2021, around 93.6 per cent of those who vaped and 61 per cent of those who had stopped vaping declared ‘that the e-cigarette helped them quit smoking’, representing no less than 1.35 million smokers who had stopped smoking (Pasquereau et al. 2022a). In an open letter to the WHO, 100 world-renowned experts in tobacco and public health concluded, ‘Overall, the results convincingly demonstrate that smoke-free alternatives to cigarettes displace smoking’ (Abad et al. 2021).

Conclusion: The suggested public policy is to avoid the prohibition of soft drugs and encourage the right substitutes

Prohibition must be avoided for soft drugs because both theory and experience show that regulatory prohibition of a consumer good does not make the reasons for which it is consumed disappear. Prohibition creates effects that one might want to avoid, such as injecting new life into illegal trafficking, causing an increase in the consumption of services such as the police and courts, and triggering high levels of HIV transmission.

When it comes to taxation and behavioural regulations, one of the crucial elements to be taken into account in their implementation is the availability of good substitutes. In their absence, since the consumers' needs have not changed, they will seek to satisfy them in other ways, negating the objectives of the taxation implemented.

This phenomenon is particularly visible in areas where taxation targets so-called 'sin' behaviours, which are harmful to the person practising it. For decades, ever more drastic taxes and regulations have targeted these behaviours but have not succeeded in eliminating them.

However, a turning point in the field of smoking seems to have occurred with the emergence of 'smoke-free' products in the market. Increasingly popular with consumers, they are a real alternative to traditional cigarettes. These products provide an opportunity to align the desires of consumers with those of public authorities, and it is possible to avoid nearly a billion premature and preventable deaths worldwide during this century if smokers

around the world stopped smoking cigarettes and switched to these products (Nutt 2022).

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Chapter 3: Age old question: Solving Europe's pensions conundrum

By Christian Christian Năsulea, Executive Director of IES Europe, and Nicolas Marques, Managing Director of IEM

Summary

- Global pension systems face significant challenges due to ageing populations and mounting debts and deficits, thus limiting essential investments.
- Inequities and financial stress arise due to varying retirement ages and special pensions, while shifting demographics strain systems, with fewer contributors supporting more retirees.
- Common European Union EU–level concerns emphasise the need to diversify funding and balance sustainability with equity.
- Political motives and perceived inequalities often impede reforms, affecting system stability.
- Sustainable reforms are essential to ensure the viability of pension systems amid deficits and an increasing number of retirees.
- France's pension system is almost entirely pay-as-you-go based, with insufficient reserves. Pension funds are underdeveloped, which is detrimental to competitiveness and purchasing power, and will lead to a drastic decline in pensioners' purchasing power within half a century.
- Greece faces unsustainable pension expenditure, demographic shifts, and funding gaps; promoting individual investment accounts and liberalisation can yield better returns.

- Italy grapples with economic constraints, an ageing population, and fiscal instability; upholding reforms and eliminating pension fund taxes must be encouraged.
- Romania's sluggish reforms, demographic changes, and fiscal stress impact sustainability; focussing on removing exemptions, increasing contributions, abolishing special pensions, and enhancing transparency will improve the system.
- Spain's pay-as-you-go (PAYG) model contends with mounting debt, deficits, and high unemployment, thus affecting pensions; transitioning to a three-pillar system and promoting voluntary savings may offer a path to sustainability.

From theory to practice

The pay-as-you-go (PAYG) pension system, prevalent in many countries, operates differently from funded pension systems. Under the PAYG model, current workforce contributions immediately finance retiree pensions, without saving any money to pay the pensions promised. Even if occasional surpluses contribute to forming a reserve fund, the system's core principles remain the same.

Originally, PAYG had the advantage due to high birth rates, young workers entering the labour market early, and short post-retirement life expectancy. However, modern societal shifts – lower birth rates, delayed workforce entry due to extended education, early retirement options, and increased life expectancy – have altered the scenario. Consequently, there are now fewer contributors, who over a short duration, must support a large number of beneficiaries for long periods.

Despite these challenges, reforms often aim to support rather than replace PAYG systems. Historically, pension schemes have combined PAYG and funded methods. The World Bank's (1994) model proposed a three-pillar approach to building resilience for ageing populations: mandatory PAYG collective schemes (Pillar 1), compulsory collective funded schemes (Pillar 2), and voluntary individual funded schemes (Pillar 3). However, in the European Union (EU), except for Denmark, the Netherlands, and Sweden, the integration of funded schemes is limited. More extensive use of funded pensions exists outside the EU, in countries like Iceland, Switzerland, the UK, and beyond Europe, in Australia, Canada, and the US.

This leads to two major impacts within the EU: increased pension funding costs that rely on compulsory contributions and heightened risk due to funding source diversification issues.

Pay-as-you-go vs. capitalisation

From a theoretical standpoint, as posited by Paul Samuelson (1958), the 'implicit' return on a PAYG system could match that of a capitalised system if population and wage growth equalled the interest rate.[27] However, the aftermath of the baby boom disrupted this balance because of the growing gap between active contributors and retirees.

Alfred Sauvy's concept that 'today's children will provide tomorrow's pensions' (1987) is less effective now given the decline in fertility rates in Europe from 2.7 to 1.5 children per woman since 1950 (McEvoy 2023), leading to fewer workers and contributors, and straining PAYG pensions. Research indicates that financial investment returns now outpace economic growth (Bond et al. 2022). This suggests that PAYG systems are more inefficient and riskier than capitalised systems, which benefit from market performance and deliver better pensions for the same contribution amount. The Dutch pension model, which is based on contributions that are accumulated in private funds and which are then reinvested, illustrates this efficiency – a 25 per cent contribution rate leads to a net salary replacement rate of 89 per cent. In contrast, in France, a contribution rate of 28 per cent leads to a replacement rate of 74 per cent (OECD 2021).

In countries where PAYG is not dominant, it might make sense and be possible to shift to a fully private pension system, in which all contributions

27 Paul Samuelson, winner of the 1970 Nobel Prize in Economics, developed a theory of equivalence between distribution and capitalisation. In a 1958 article, the American economist envisaged an economy in which there was no possibility of accumulating capital, which would melt away like snow in the sun. Pensions would be financed exclusively on a PAYG basis with, under certain conditions, an 'implicit' return equal to that of capitalisation. In fact, if the growth rate is equivalent to the return on the financial markets, there is equivalence between the returns on PAYG (implicit) and capitalisation (explicit) (Samuelson 1958).

are invested, could result in even larger retirement incomes. Based on the average performance of Romanian private pension funds[28], a retiree's pension, obtained by placing the entire 25 per cent contribution in a private pension fund, could be 3.23 times higher than what is currently provided through the public pension system, while also including a substantial inheritance for the retirees' children. In this scenario, the net salary replacement rate in Romania would be 144 per cent.

A fully private system would enable individuals to choose their retirement age based on their financial preparedness, independent of state-determined age limits, without their decision impacting the broader community or economy. Furthermore, a private pension system would reduce the government's financial obligations towards retirees, easing fiscal pressure, especially in countries with ageing populations and declining birth rates. Such a system shifts away from the PAYG model's continuous funding requirements, thus improving fiscal outlooks without accruing additional public debt.

Private pension funds accumulate substantial amounts of money from regular contributions. This capital is then invested in various financial instruments, including stocks, bonds, and real estate, hence providing a steady stream of investment capital to the market. Long-term investment strategies typical of private pension funds can contribute to stabilising capital markets. These funds are less likely to make sudden, large-scale withdrawals. This, in turn, becomes a stabilising influence during market volatility. Further, as significant investors, private pension funds can influence corporate governance and sustainability practices. Their investment decisions can encourage companies to adopt better business practices, which can lead to overall market improvements.

In countries with almost exclusive PAYG schemes, combining PAYG and pension funds would help to reduce dependence on PAYG systems - which are deeply threatened by demographic trends - and preserve the purchasing power of future retirees. As Pierre Devolder and Roberta Melis explain, 'funded and PAYG pension schemes may seem very different, but they are in fact complementary because they deal with different risks' (Devolder and Melis 2015, p. 552). The factors that affect their respective performance

28 APAPR, 'Pilonul II de pensii private aniversează 15 ani. O reformă de succes pe calea europeană a României', *Asociatia Pentru Pensiile Administrate Privat Din România,* 2023 (https://apapr.ro/pilonul-ii-de-pensii-private-aniverseaza-15-ani-o-reforma-de-succes-pe-calea-europeana-a-romaniei/).

do not act simultaneously on these two financing mechanisms (see, for example, Bouhakkou et al. 2019), highlighting the importance of combining PAYG and funded schemes. Recent events, particularly the COVID-19 pandemic, have confirmed this reality. PAYG schemes have been undermined by reductions in activity and associated revenues. For schemes operating on a defined-benefit basis (with no mechanism for adjusting benefits to income) and with no reserves, the pandemic was problematic (Feher and de Bidegain 2020). Conversely, PAYG schemes that had reserves to cope with shocks, or that operated on a funded basis, experienced less difficulty in overcoming the crisis, insofar as the existence of capital invested over the medium or long term made it possible to cushion the impact.

An overview of the situation in numbers

As part of this work, we have quantified the shortfall linked to the underdevelopment of retirement savings in various EU countries, based on Organisation for Economic Co-operation and Development (OECD) data on retirement savings for the period 2012–2021 (OECD 2022, Tables A.B.3 and A.B.7). In this ten-year period, which includes both bullish and bearish phases, the real return on pension savings has fluctuated between –4.8 per cent in 2018 and 9.5 per cent in 2019. On average, it has been 4.3 per cent per year.[29] During this period, retirement savings invested by pension funds or retirement savings managers returned 4.3 per cent more than inflation per year.

Different countries have benefitted from this windfall to varying extents, depending on the size of the pension savings they have accumulated for working people or retirees.

To quantify the shortfall in pension funding available in European countries, we have assessed the extent of the underdevelopment of retirement savings compared with the OECD average (Table 1). During 2012–2021, OECD countries accumulated an average of 84 per cent of the gross domestic product (GDP) in retirement savings. Savings set aside for retirement exceeded 100 per cent of the GDP in a whole series of Anglo-Saxon countries (Australia, Canada, the US, and New Zealand) as well as in Europe (Iceland and Switzerland).

29 Calculated by Institut Économique Molinari, using the weighted average of assets under management.

Almost all EU countries have less developed pension funding, ranging from 1 per cent of the GDP (Greece) to 25 per cent of the GDP (Finland). This corresponds to a pension savings deficit compared with the OECD average of between 25 per cent and 84 per cent of the GDP. Only three countries have more developed retirement savings than the OECD countries: Sweden (86 per cent of the GDP), the Netherlands (178 per cent of the GDP), and Denmark (207 per cent of the GDP). Overall, retirement savings represented 29 per cent of the GDP in the EU,[30] which means that on average retirement savings in EU countries are underdeveloped by 55 per cent compared with the OECD average.

The annual loss of income associated with this underdevelopment is calculated by multiplying the average return on retirement savings and the retirement savings deficit. It varies between 1.1 per cent of the GDP (Finland) and 3.6 per cent of the GDP (Greece) per year. On average, in the EU, the loss represents 2.4 per cent of the GDP per year (retirement savings deficit of 55 per cent of the GDP × average annual return of 4.3 per cent per year), or €348 billion in 2021.

This annual loss of income represents between 9 per cent (Finland) and 5.3 per cent (Lithuania) of pension expenditure in 2021, and on average 20 per cent of pension expenditure in the EU.

30 Calculated by the Institut Économique Molinari, by aggregating the pension savings of 26 countries (data for Cyprus was not available) and relating it to the aggregate GDP of these 26 countries over the period.

Table 1: Retirement savings deficit vs. OECD average (2012–2021)

Country	Assets in funded and private pension plans	Asset Gap vs OECD average		Annual income loss related to underdevelopment of funded and private pensions plans				
	as a % of GDP	as a % of GDP	in billions of euros	as a % of GDP	in billions of euros	as a % of pension expenditure	per working or retired person in € gross	in % of average pension
Germany	7%	77%	2,796	3.3%	121	28%	1,880 €	10%
Austria	6%	78%	317	3.4%	14	24%	2,010 €	8%
Belgium	32%	52%	263	2.2%	11	21%	1,540 €	7%
Bulgaria	11%	73%	52	3.2%	2	44%	450 €	16%
Croatia	25%	59%	35	2.6%	1	30%	510 €	12%
Denmark	207%	-122%	-420	-5.3%	-18	-46%	-4,140 €	-15%
Spain	14%	70%	861	3.1%	37	24%	1,180 €	7%
Estonia	15%	69%	21	3.0%	1	44%	950 €	14%
Finland	60%	25%	62	1.1%	3	9%	660 €	3%
France	10%	74%	1,852	3.2%	80	24%	1,720 €	9%
Greece	1%	84%	152	3.6%	7	23%	960 €	8%
Hungary	5%	79%	122	3.4%	5	49%	770 €	15%
Ireland	41%	43%	186	1.9%	8	48%	2,450 €	13%
Italy	10%	75%	1,361	3.2%	59	21%	1,540 €	8%
Latvia	13%	71%	24	3.1%	1	44%	750 €	15%
Lithuania	7%	77%	44	3.4%	2	53%	870 €	19%
Luxembourg	3%	82%	59	3.5%	3	39%	5,050 €	15%
Malta	35%	49%	7	2.1%	0	35%	900 €	9%
Netherlands	178%	-93%	-814	-4.1%	-35	-39%	-2,730 €	-11%
Poland	11%	74%	424	3.2%	18	32%	700 €	11%
Portugal	15%	69%	149	3.0%	6	23%	850 €	8%
Romania	5%	80%	192	3.5%	8	40%	640 €	15%
Slovakia	12%	73%	73	3.1%	3	41%	750 €	15%
Slovenia	7%	77%	40	3.3%	2	34%	1,070 €	13%
Sweden	86%	-2%	-11	-0.1%	0	-1%	-60 €	0%
Czechia	8%	76%	181	3.3%	8	41%	1,000 €	13%
EU 27	29%	55%	8,029	2.4%	348	20%	1,100 €	7%
OECD	84%	0%	0	0%	0	0%	0 €	0%

Source: Institut Économique Molinari calculations based on OECD (2022) and Eurostat (2022) data[31]

To calculate the loss per person in the various countries, we divided the shortfall linked to the underdevelopment of retirement savings by the number of people who are affected by this underdevelopment, i.e., the number of working people and retirees. In the case of a funded scheme, these two populations are, in effect, associated with the return on retirement savings. In the accumulation phase, the gains associated with the savings of working people (share dividends, bond coupons, or capital gains) are reinvested to help build up retirement capital. In the de-accumulation

31 Calculations based on OECD (2022, Tables A.B.3 and A.B.7) and Eurostat (Table ESSPROS-pension type [SPDEPB] taking the total, except Disability Pensions, in millions of euros, percentage of GDP, and number of beneficiaries and table Employment indicator [INDIC_EM] for the working population).

phase, the gains are used to improve pensions and revalue them more accurately. This means that working people and retirees who are unable to save for retirement are doubly penalised. Indeed, working people make pension contributions that are immediately redistributed to their retired elders – no dividends or capital gains that would enhance their own future pensions are accumulated. Retirees meanwhile depend exclusively on the contributions of working people – they do not benefit from the income that would have been generated by the dividends and capital gains associated with retirement savings.

Taking the three EU countries that have invested the most in retirement savings (Denmark, the Netherlands, and Sweden; Table 2) as a basis for comparison. The shortfall linked to the underdevelopment of retirement savings represents 5.5 per cent of the GDP in the EU or €808 billion in 2021, and 47 per cent of the pension expenditure or €2,600 per year per contributor or retiree.

Table 2: Retirement savings deficit vs. the top three EU countries (2012–2021)

Country	Assets in funded and private pension plans	Asset Gap vs OECD average		Annual income loss related to underdevelopment of funded and private pensions plans				
	as a % of GDP	as a % of GDP	in billions of euros	as a % of GDP	in billions of euros	as a % of pension expenditure	per working or retired person in € gross	in % of average pension
Germany	7%	150%	5,423	6.5%	235	54%	3,640 €	19%
Austria	6%	151%	612	6.5%	27	46%	3,880 €	16%
Belgium	32%	124%	632	5.4%	27	51%	3,690 €	16%
Bulgaria	11%	146%	103	6.3%	4	89%	890 €	33%
Croatia	25%	132%	77	5.7%	3	66%	1,150 €	26%
Denmark	207%	-50%	-171	-2.2%	-7	-19%	-1,680 €	-6%
Spain	14%	143%	1,749	6.2%	76	49%	2,400 €	14%
Estonia	15%	141%	44	6.1%	2	90%	1,950 €	29%
Finland	60%	97%	244	4.2%	11	34%	2,580 €	12%
France	10%	147%	3,670	6.4%	159	47%	3,410 €	17%
Greece	1%	156%	284	6.8%	12	43%	1,790 €	15%
Hungary	5%	152%	234	6.6%	10	94%	1,480 €	29%
Ireland	41%	116%	502	5.0%	22	128%	6,600 €	34%
Italy	10%	147%	2,685	6.4%	116	41%	3,040 €	15%
Latvia	13%	144%	48	6.2%	2	89%	1,520 €	30%
Lithuania	7%	150%	85	6.5%	4	103%	1,690 €	36%
Luxembourg	3%	154%	112	6.7%	5	74%	9,550 €	28%
Malta	35%	122%	19	5.3%	1	86%	2,230 €	22%
Netherlands	178%	-21%	-181	-0.9%	-8	-9%	-610 €	-2%
Poland	11%	146%	843	6.3%	37	63%	1,390 €	22%
Portugal	15%	142%	306	6.1%	13	48%	1,740 €	17%
Romania	5%	152%	368	6.6%	16	77%	1,220 €	29%
Slovakia	12%	145%	146	6.3%	6	83%	1,500 €	29%
Slovenia	7%	150%	78	6.5%	3	66%	2,070 €	26%
Sweden	86%	71%	382	3.1%	17	31%	2,120 €	10%
Czechia	8%	149%	354	6.4%	15	80%	1,960 €	26%
EU 27	29%	127%	18,646	5.5%	808	46%	2,560 €	16%
OECD	157%	0%	0	0%	0	0%	0 €	0%

Source: Institut Économique Molinari calculations based on OECD (2022) and Eurostat (2022) data

These results come as no surprise. In its 1994 analysis, the World Bank pointed out that in PAYG systems, when populations are young, low contributions deducted from a large number of working people make generous benefits possible. But as populations age and PAYG schemes mature, they need more contributions to offer the same benefits to the growing number of pensioners.

The situation at the national level

France

Pension schemes in France were developed in the nineteenth century on the basis of capitalisation. This solution, which was long recognised as being safer than the alternatives (tontines, a lack of provisioning amounting to a particularly unstable distribution to voluntary schemes, etc.), was imposed by the public authorities on institutions offering retirement benefits. In particular, the regulations required mutual benefit societies to invest the pension contributions paid by their members in the Caisse des Dépôts et Consignation. This arrangement enabled the public authorities to simultaneously write off the French public debt and finance the economy (Marques 2000).

As the state's financial needs increased, largely as a result of the two world wars that devastated continental Europe, there was a shift towards a PAYG system that allowed for benefits to be increased immediately, rather than waiting for savings to build up. First timidly initiated with the law of 1928–1930, this change later took hold under the Vichy regime, with the creation of the Allocation Aux Vieux Travailleurs Salariés (AVTS) in 1941. This was followed by a confiscation of part of the reserves of the capitalisation funds in 1944 to deal with the deficits of this PAYG scheme (see Valat 2020).

The complementary nature of PAYG and funded schemes was widely recognised. In 1944, the entourage of the provisional government's social affairs commissioner came out in favour of a mixed system, combining PAYG and capitalisation. However, this scenario, which was supported by many pension fund representatives, trade unionists, and mutualists,

was discarded in 1945. At the end of the war, the priority was to finance reconstruction and public authorities opted for PAYG without attempting to hide the fact that it was 'more expensive than capitalisation'. The social partners made the same sensible choice in 1947 when they created the supplementary pension scheme for managerial staff (Agirc). But after some hesitation, they rejected the idea of creating a scheme combining PAYG and capitalisation[32], and opted instead for PAYG alone (De Baudus de Fransures 1969). While the combination of high inflation and a rising birth rate made this an attractive option, specialists were aware that it was only a temporary improvement.

As early as the 1960s, the French Planning Commission (Commissariat au Plan) began to express concern about the lack of reserves in a whole series of schemes with poor protection against ageing, particularly the general scheme (General Planning Commission 1965). In 1978, Prime Minister Raymond Barre stressed that 'as in other countries, we will have to arrive at capitalisation mechanisms'.[33] However, this move was periodically postponed, as the public authorities failed to take long-term issues into account. In 1993, Prime Minister Pierre Bérégovoy proposed setting up a pension guarantee fund, a project that would be greatly delayed. It was taken up again in 1999 by Lionel Jospin, with the creation of the Fonds de Réserve pour les Retraites (FRR), but did not grow as planned. By the end of 2022, the FRR had only €21 billion in assets, not the €150 billion initially planned for 2020 (Institut Économique Molinari and CroissancePlus 2021).

The question of the complementarity between PAYG and capitalisation has too often been treated as a political marker in France, with oppositions arising more from posturing than from substance, as illustrated by the response to the Thomas Law (Thomas 1997). This law, passed in 1997 by a right-wing government, introduced pension funds. It was repealed by Lionel Jospin's left-wing government in 2001, before, introducing employee savings plans dedicated to retirement a few months later, under the leadership of Laurent Fabius.[34] Officially, social partners were opposed

32 'Official journal. JORF n° 0247 of 20/10/1945', *French Republic*, 1945 (https://www.legifrance.gouv.fr/download/securePrint?token=YGY5QfpDVVbphhj7CgAW).

33 M. Raymond Barre: les avantages sociaux devront être financés par la capitalisation', *Le Monde*, 12 June 1978 (https://www.lemonde.fr/archives/article/1978/06/12/m-raymond-barre-les-avantages-sociaux-devront-etre-finances-par-la-capitalisation_2973207_1819218.html).

34 Mabille, P. 'La loi fabius, cheval de troie pour créer les fonds de pension', *Les Echos*, 29 January 2002 (https://www.lesechos.fr/2002/01/la-loi-fabius-cheval-de-troie-pour-creer-les-fonds-de-pension-683639).

to the introduction of pension funds, which came with the risk of weakening the PAYG system. However, these same social partners have managed an optional funded pension scheme since 1964 (Préfon), co-managed employee savings schemes for decades, and been responsible for the additional civil service pension fund (ERAFP) since 2005. This pension fund, to which all civil servants make compulsory contributions, is a collective capitalisation scheme under Pillar 2, in accordance with the World Bank typology. With €38 billion in retirement savings as on 31 December 2022, and an annual rate of return of 3.7 per cent since its creation, it has been a great success.

Generally speaking, all Pillar 2 schemes in France using collective capitalisation have done well. Provisions are made for the pensions of the Banque de France employees, enabling the central bank to self-finance a significant portion of pensions without calling on taxpayers, and to return significant sums to the state in certain years.[35] The pensions of the staff and elected representatives of the Senate, of which 55 per cent are funded and 45 per cent distributed, cost taxpayers much less than those of the national assembly or the state, which are funded entirely by compulsory deductions (Marques 2023). In the private sector, French pharmacists have succeeded in offsetting the effects of the decline in the demographics of their regulated profession, following the introduction of a numerus clausus, by generalising funded pensions to supplement the PAYG system. The attractive return on collective funded pensions boosts pensions and offsets the decline in the return on PAYG schemes, which are struggling.[36]

This situation is set to continue. In his book *Le Capital au XXIe Siècle*, Thomas Piketty forecasts future growth of around 1.5 per cent, which is well below the rate of return on capital (4.25 per cent) (Piketty 2013). Under these conditions, relying exclusively on PAYG to fund pensions is

35 On 31 December 2021, the Banque de France's pension liabilities totalled €14.3 billion and the bank had €15.4 billion, i.e., a net surplus of €1.1 billion. On 31 December 2022, the Banque de France's pension liabilities amounted to €13.7 billion and the bank had €13 billion at its disposal, i.e., a shortfall of €0.7 billion after a repayment of €1.1 billion to the state (Banque de France 2023).

36 The supplementary pension scheme for pharmacists operates on a mixed basis, with a PAYG supplementary scheme (RCR) and a funded supplementary scheme (RCC). The PAYG scheme (RCR) attracts 61 per cent of contributions and distributes 48 per cent of benefits. Capitalisation (RCC), meanwhile, attracts 39 per cent of contributions and distributes 52 per cent of benefits. The return on investment for capitalisation is better, as the RCC benefits from the return on invested capital, while distribution (RCR) is penalised by the unfavourable demography of pharmacists, with 0.9 contributors for every beneficiary (CAVP 2022).

a sub-optimal approach. Thus, diversifying the sources of pension funding by relying more on capitalisation should be a priority for the French authorities and their counterparts in many European countries.

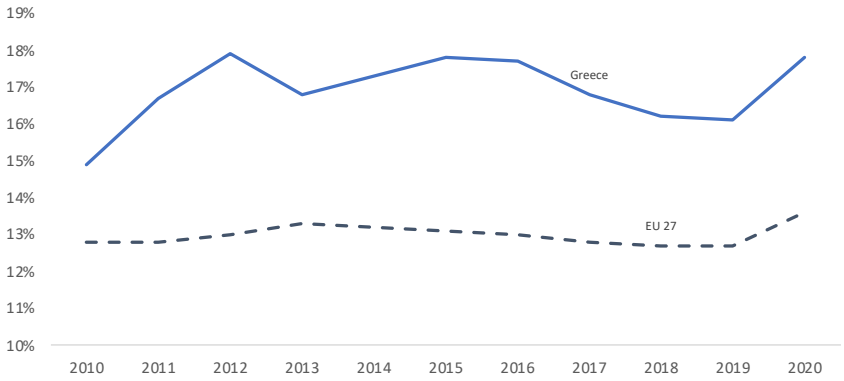
Funded pensions represent 10 per cent of the GDP, on average, which is a deficit of 74 per cent compared to the OECD average. The annual loss of income associated with the underdevelopment of pension funds represents 3.2 per cent of the GDP per year (retirement savings deficit of 74 per cent of the GDP × average annual return of 4.3 per cent per year), i.e., €80 billion in 2021. The loss of income linked to the underdevelopment of retirement savings is equivalent to 24 per cent of retirement spending (which represented 13.5 per cent of the GDP in 2021). This loss amounts to an average of €1,720, which is equivalent to a pension loss of 9 per cent.

Greece

The pension system in Greece has been reformed many times, as a result of perfunctory changes in previous periods that merely prolonged the existing problem (Giannitsis 2016). Still, between 2000 and 2017 Greece had the highest increase in pension expenditure (5.3 percentage points, as a percentage of the GDP) among the 39 most developed economies in the world (OECD 2021). But the unsustainability of the pension system in Greece can be seen in the frequent amendment of the relevant laws. From the beginning of the 2008 financial crisis until 2021, at least four insurance laws were implemented; these laws helped shape the current pension system. This system has the following basic features: a national and proportional main pension for all, retirement at 67 (or 62, with 40 years of work), one main pension pillar, and one supplementary pension pillar.

The long delay in transitioning from a redistributive system to a mixed system with a funded pillar, in addition to the recent introduction of funded schemes had a fiscal impact – as Greece pays for most of its pension expenditure from general taxation (Kangur et al. 2021) – and a loss of real income for workers and pensioners. But despite a decade of difficult reforms during the crisis, Greece continues to have the highest pension expenditure (as a share of the GDP) in the EU and is far from the relative average (Figure 1).

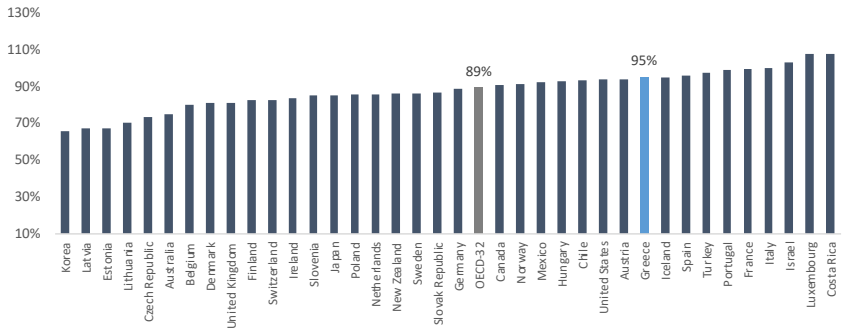
Figure 1: Expenditure on pensions as a percentage of the GDP



Source: Eurostat (2023)[37]

At the same time, people over 65 years in Greece have a high average net income, which is 95 per cent of the average net income of the whole population. The corresponding average for OECD countries is 89 per cent (Figure 2).

Figure 2: Average net income of persons aged 65+, as a percentage of the average net income of the whole population



Source: OECD (2021)

37 'Expenditure on pensions', *Eurostat*, 2023 (https://ec.europa.eu/eurostat/databrowser/view/tps00103/default/table?lang=en).

The pension system has another major challenge to face – that of bleak demographic projections. According to the European Commission's estimates for Greece, the life expectancy for people aged 65 and over will continue to rise until 2070, the percentage of pensioners will increase until 2050, and the fertility rate will grow marginally, all while net migration remains stagnant (Figures 3a–d).

Figure 3a: Life expectancy at 65

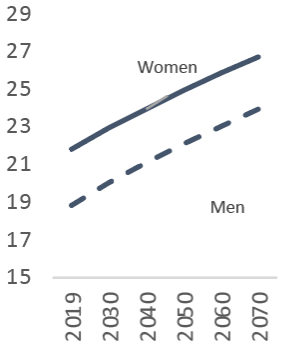


Figure 3b: Pensioners per 1,000 inhabitants

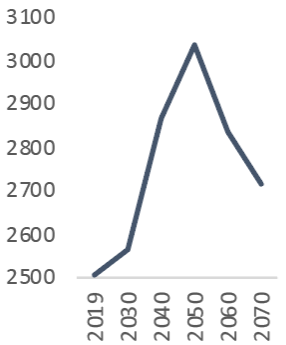


Figure 3c: Fertility rate

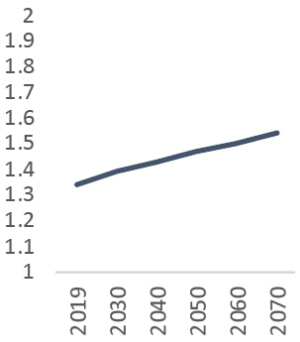
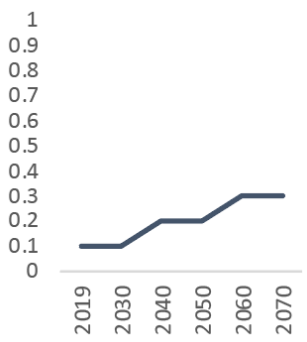


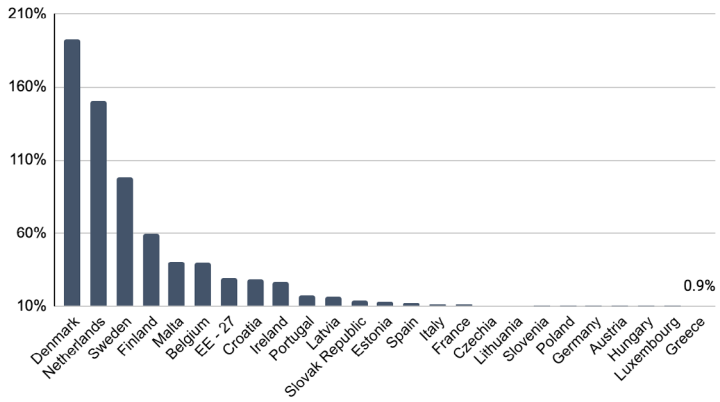
Figure 3d: Net migration as a percentage of the total population



Source: Directorate-General for Economic and Financial Affairs (2021)

Despite the realities of increased government spending on pensions and pessimistic demographic projections, Greece has not made the necessary effort in time to make the transition to a strengthened funded system that would alleviate some aspects of the problem. Among the EU countries, Greece has been and remains slow to allocate funds to funded pension schemes; during 2012–2021, the average was below 1 per cent of its GDP. At the same time, the average of EU countries was 29 per cent (Figure 4). It is worth noting that among the four countries in the EU with the most funds available in funded pension schemes are the Nordic nations Denmark, Sweden, and Finland.

Figure 4: Assets in funded and private pension plans as a percentage of the GDP



Source: OECD (2023)

Greece's failure to reform its pension system towards a strong, growth- and investment-oriented funded system has had a significant impact on citizens' income. This becomes clearer on comparing the results of the Greek model (and other similar European systems) with those of advanced OECD economies. If the funded pillar of the Greek pension system was as well developed as that in other OECD countries, its annual return would be around 3 per cent of the GDP. This translates into a loss of per capita income of €960 per year, due to the low growth of the funded pillar over the last decade (see Table 1)

Italy

While it is not possible to retrace all the events that have contributed to the formation of the Italian pension system as we know it today, it is nevertheless worth highlighting the main ones. The first was the Dini reform of 1995, which started the transition from a salary to a contributory system.[38] In other words, if pensions previously corresponded to a percentage of the salary received by the worker in the last period before retirement,[39] from 1995 the pension amount was calculated based on the contributions paid by the worker over his/her working life. It was clearly envisaged that this would happen gradually: the contributory tax was applied immediately to newly hired workers after 1995, while workers with at least eighteen years of contributory seniority at the end of 1995 would maintain the salary system. A mixed system was to apply to workers with less than eighteen years of contributory seniority, i.e., paid until 1995, and contributory for the following years.

In the fifteen years following the Dini reform, legislative interventions were mostly limited to postponing, more or less coercively,[40] the retirement age and to fiscally incentivising membership of supplementary pension funds.[41] In 2011, following the alarm of the markets that brought Professor Monti to government, the Fornero reform and the Save Italy manoeuvre introduced some important innovations, effectively anticipating the total abandonment of the remuneration system and intervening again on the retirement age. In the first case, even those who were maintaining the salary system in 1995, having already completed eighteen years of contributions, moved to a mixed system and therefore included the contribution calculation, starting from 2012. As regards the retirement age, a system of progressive increases differentiated by category of workers ensured that this became 66 years and 7 months for all workers, starting from 2018.

38 Legislative Decree 335/1995.

39 A few years earlier, the Amato reform (Legislative Decree 503/1992) had intervened to modify the calculation of the pension, considering the entire working life of the worker and not just the last salaries, while keeping the remuneration system intact.

40 The Maroni reform (Delegation Law 243/2004, replaced by Legislative Decree 252/2005) limited itself to offering generous monetary incentives to those who voluntarily decided to postpone their pension. Law 247/2007 (Prodi government) introduced specific quotas for access to pensions to be calculated based on working life and age. Law 102/2009 progressively shifted the retirement age to 65 for public sector workers and provided that, starting from 2015, the retirement age for all workers would be updated based on the increase in life expectancy of the population

41 Legislative Decree 47/2000.

It should be underlined that, although far from perfect, the Italian pension system resulting from the Fornero reform reached a situation of equilibrium. The debt crisis of the preceding years was overcome – not so much because the debt problem was resolved, but rather because the markets' attentions waned, also thanks to the favourable global economic situation, at least until the pandemic. Some interventions, of varying levels of creativity, have also attempted to accommodate older voters by reducing the retirement age of workers close to retirement. In other words, Italy returned to using the pension system as a lever of consensus, after having one of the most unsustainable systems in Europe.

Among these interventions, were the voluntary Ape and social Ape,[42] signed by the Renzi government. The first one concerned workers aged 63 years or over and consisted of loans from banks, which would pay the pensions (from 75 to 90 per cent of the future net pension) to workers for the remaining months up to 66 and 7 months. The workers would in turn repay the loan in instalments over 20 years, through a withholding by the National Institute for Social Security (INPS) from their future pensions. It was, therefore, an exit tool without public finance costs, which gave workers a choice between an earlier retirement with a more limited social security treatment and later retirement with better social security treatment. The social Ape was an allowance financed by taxpayers, and paid by the INPS to particularly vulnerable categories of workers who had reached 63 years of age and were able to claim at least 30 years of contributions. The social Ape still exists today. The voluntary Ape, however, was cancelled after an experimental phase (Del Prato and Paradisi 2019).

Starting from 2019, and on an experimental basis until 2021, the first Conte government introduced the Quota 100,[43] i.e., a new early retirement system for those who reach a chronological age of at least 62 years and a minimum contributory seniority of 38 years. This last mechanism was updated to make room for Quota 102 in 2022 and Quota 103 in 2023. Quotas 100, 102, and 103, according to INPS, cost €11.6 billion. At the time of writing this report, the government had announced the replacement of Quota 103 with Quota 104, a more restrictive but less costly provision.

Spending in Italy exceeded €320 billion in 2021 (INPS 2023), representing approximately 17.2 per cent of the GDP. Italy is once again in a potentially

42 Established with the 2017 Budget Law.
43 Legislative Decree 4/2019, converted into Law 26/2019.

fragile state, so it is attracting the attention of the markets.[44] Any pension-related intervention that moves away from financial equilibrium puts the stability of public accounts at risk.

The Fornero reform of 2011 placed Italy in a position of relative stability. But the country is still in a precarious balance, primarily due to poor economic growth and unstable public finances. Moreover, the low birth rates and increase in life expectancy that are observed in all developed countries are more marked in Italy than elsewhere. An indicative measure is the old age dependency ratio, i.e., the ratio between people of retirement age (65 years or more) and people of working age (between 20 and 64 years). Italy has an elderly–young ratio of 37.5 compared to an average in the EU of 33 and in the Euro Area of 33.7 (Eurostat 2022a) This means that it is crucial to avoid disturbing the balance of the pension system accounts with interventions similar to Quota 100. Further, it would be suitable for Italy to rely more on forms of supplementary pension. Yet, as mentioned in the foregoing analysis, the only intervention in favour of this form of social security dates back to 2000 and Italy is still behind other countries. While in many countries returns from pension funds are free from taxation, Italy taxes these returns and, with the 2015 Stability Law, the level of taxation was increased from 11.5 to 20 per cent. The tax on these returns is not balanced by better treatment of contributions, which are deductible in Italy only up to an annual ceiling of €5,164.57 (elsewhere they are often fully deductible).

Clearly, further development of the private pension system would have positive side effects on economic growth. Currently, the value of private pension funds is approximately 10 per cent of the GDP. The loss in terms of per capita GDP due to the lack of investment in private pension funds, similar to the average of OECD countries, is approximately equal to €1,500 (3.2 per cent of the per capita GDP).

Romania

The pension system in Romania has undergone significant transformations, influenced by various economic and demographic challenges. The pension system has experienced slow and delayed reforms. A notable aspect in the Romanian context is the balance between sustainability and adequacy of pensions, reflecting the broader trends in European pension systems.

44 The BTP-Bund spread, commonly used to measure the solidity of the Italian system, has reached 200 in October 2023.

Romania has grappled with the fiscal implications of its pension policies. The evolution of the Romanian pension system has been marked by several legislative modifications that have aimed to address both demographic shifts and economic pressures. Key characteristics of the current Romanian pension system include a mixed approach with state-managed and private components, unfunded PAYG (Pillar 1) and capitalisation in individual accounts, mandatory (Pillar 2) and voluntary (Pillar 3) components, a standard retirement age with provisions for early retirement under certain conditions, and efforts to align pension benefits with individual contributions, while ensuring a safety net for the elderly.

According to a study conducted by the CFA Society, in 2019, the amount of money missing from the public pension system was equal to 267 per cent of the GDP (Popa et al. 2019). This represents the estimated present value of the public pension system's unfunded liabilities. Two other scenarios, making different assumptions, estimate these unfunded liabilities at 224 and 323 per cent.

Demographic factors explain in large part why the Romanian public pension system does not collect enough money to pay out all the current pensions on a continuing basis. In 2022, the public pension's system deficit was 15 per cent of the collected contributions. This included the accounting deficit (lei 892 million) and the subsidies from the general state budget (lei 11,938.2 million).[45] Obviously, the deficit of the pension system is a supplementary burden on the state budget, which has run on a deficit since 1990. This is a chronic problem: the last time pension contributions were higher than paid pensions was over two decades ago. Even more worrying is that the trends of the Romanian demographic will aggravate the deficit. In the early nineties, there were about three contributors to one beneficiary, but nowadays this ratio are around 1.25 contributors to one beneficiary (INSSE 2023).

Another problem faced by the Romanian pension system and by Romanian society in general is the different retirement ages for different professions. This creates perceived or actual inequalities. Certain groups being allowed to retire earlier than others may be viewed as unfair, especially if the differences are not based on clear, objective criteria like the physical demands of the job or health considerations. This perceived inequity can lead to dissatisfaction and a sense of injustice among those who must

45 'Informații execuție bugetară', *Ministerul Finanțelor*, 2023 (https://mfinante.gov.ro/domenii/bugetul-de-stat/informatii-executie-bugetara).

work longer, potentially affecting social cohesion and the general acceptance of the pension system. For example, people may accept early retirement for miners or for military personnel involved in peace-keeping operations in Afghanistan, Bosnia, Kosovo, and Iraq. But it would be more difficult to accept this as true for all military personnel, judges, and prosecutors. Moreover, large segments of the workforce retiring early would lead to a shortage of skilled and experienced workers.

Varying retirement ages also complicates the administration processes of the pension system. A uniform retirement age simplifies the calculation and distribution of pensions, whereas having different ages requires more complex administrative systems to manage the various categories of retirees. Such complexity can increase the costs of administering the pension system and the likelihood of errors. This can further erode public trust in the system. Early retirement increases the financial strain on a PAYG system, as few contributors are supporting a large number of retirees for a long period. This imbalance invariably jeopardises the financial sustainability of the pension system, potentially requiring increased contributions from those still working, or the allocation of additional funds from other sources to maintain solvency.

The special pensions system in Romania, which has long been a contentious issue, is designed to provide substantial retirement benefits to certain groups of workers, including military personnel, magistrates, and parliamentarians. There are about ten to fifteen pension systems, related to specific professions (military, judges, prosecutors, members of parliament, mayors, etc.) that allow early retirement (20 years of work, compared to 35 years in general, or even less, for MP), many without any contribution during the active stage; these beneficiaries receive a significantly higher pension than the general one for an equivalent income. This was not a significant problem (amounting to hundreds of millions of euros per year) but the multiplication of exceptions and beneficiaries increased this burden by an order of magnitude (to billion of euros peryear) and the processes seem unstoppable. For example, a recent attempt to solve this problem in the case of judges and prosecutors ended in a proposal for gradual elimination by 2060.

This system has thus faced criticism for fostering inequality and imposing a significant financial burden on the country’s budget. The introduction of a bill by the ruling coalition, aiming to curb the unequal benefits of the system, has sparked a heated debate. The proposed legislation seeks to make the system sustainable and lessen its impact on the public

budget, aligning with Romania's commitments under its recovery and resilience plan. However, the potential effects of this bill on the privileges of special pension recipients have prompted negative reactions and raised concerns about the fairness of the changes. Still, the government asserts that reforming the special pension system is essential for the long-term stability of the overall pension system and to address the country's fiscal challenges. The government highlighted the unsustainability of the current system and its significant impact on the public budget, which limits investment in critical sectors like education, healthcare, and infrastructure. Thus, the bill is a necessary step towards creating a more equitable pension system.

Romanian politicians have ignored and aggravated the structural problems of the public pensions system. But they have reluctantly adopted a partial solution, along with the World Bank's three-pillar approach, in which capitalisation (Pillars 2 and 3) is merely a means to support the main PAYG system. To uphold Pillar 1, the main parameters of the system have been modified to include higher taxes, longer contribution periods, and increased retirement age, without changing the nature of the system: it is and always will be an unfunded, politically managed redistribution mechanism.[46] For this reason, reasonable measures have been reluctantly adopted, only to be quickly nullified in electoral years. The most recent, ongoing modification is set to increase pensions by 40 per cent starting in 2024. This highlights how the Pillar 1 pension system is being leveraged by politicians to secure immediate votes at the expense of future tax obligations and public debt.

Spain

Under the mandate of the Spanish General and Dictator Francisco Franco Bahamonde,[47] the public pension system based on a PAYG approach was established in Spain through Law 193/1963 (Gobierno de España 1963). This social security system follows the one created by German Chancellor Otto von Bismarck in Germany in 1881, which was also copied by the Roosevelt administration in the US through the Social Security Act of 1935.

46 'Anexa 5. Vârsta standard de pensionare și stagii complete de cotizare', *Ministry of Labour*, 2021 (https://www.mmuncii.ro/j33/images/Documente/MMJS/Transparenta-decizionala/5210-A5-.pdf).

47 For more information on the history of social security in Spain, see: https://www.seg-social.es/wps/portal/wss/internet/Conocenos/HistoriaSeguridadSocial.

Social security in Spain is provided through a social protection system that covers a variety of contingencies. It has two modalities: welfare non-contributory and compulsory contributory. The first is financed by general taxes and benefits people in a state of disability or those who do not meet the necessary requirements to qualify for a contributory pension. The second, contributory pension, is for workers who have contributed to social security over a certain period of time[48] and who meet a series of requirements. The public pension system[49] in Spain is based on the following principles:

- PAYG principle: The contributions of active workers finance the benefits existing at the moment. In other words, active workers are not creating a secure fund from which they will draw their own pensions, but are generating a future right to receive their pensions, which will in turn be deducted from the base salary of active employees at that time.
- Principle of contributory proportionality: The amount of benefit is directly related to the amounts contributed to the public system and to the period in which the contributions are made.
- Principle of universality: Even those who have not contributed to the system can access the non-contributory benefits to cover basic needs, whether they are national or foreign citizens, by fulfilling a series of requirements.[50]
- Principle of public management: The security system is compulsorily managed by the state.
- Principle of sufficiency of benefits: The amount of benefits must be sufficient to ensure the protected needs.

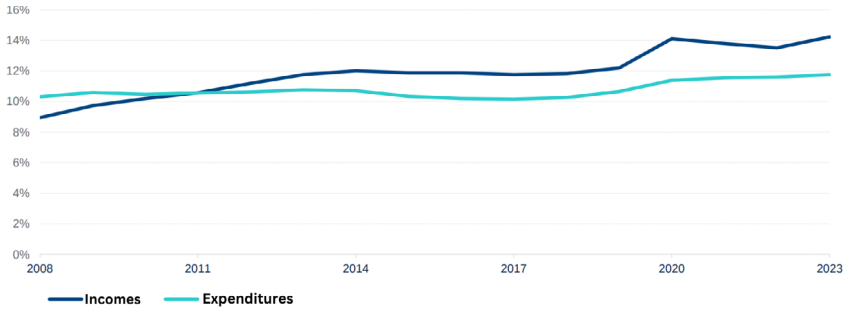
48 In 2023, you must be 66 years and 4 months old, or 65, if you have contributed at least 37 years and 9 months. In general, the minimum contribution period is 15 years (5,475 days), with 2 years of that total having been contributed in the 15 years immediately prior to retirement.

49 Social benefits, such as the public retirement pension, are protected and recognised by the Spanish Constitution (1978) in Article 41: 'The public authorities shall maintain a public Social Security system for all citizens, which guarantees sufficient assistance and social benefits in situations of need, especially in the case of unemployment. The assistance and complementary benefits will be free'.

50 The Non Contributive Pensions (PNC) are financed through contributions from the state budget to the social security budget, with credit appearing in the expenditure budget and allocations of the Institute for the Elderly and Social Services (IMSERSO).

The social security system has an accumulated debt of more than €106 billion according to the Bank of Spain.[51] The contributory system closed in 2021 with a deficit equivalent to 2.2 per cent of the GDP (Devesa and Doménech 2022).

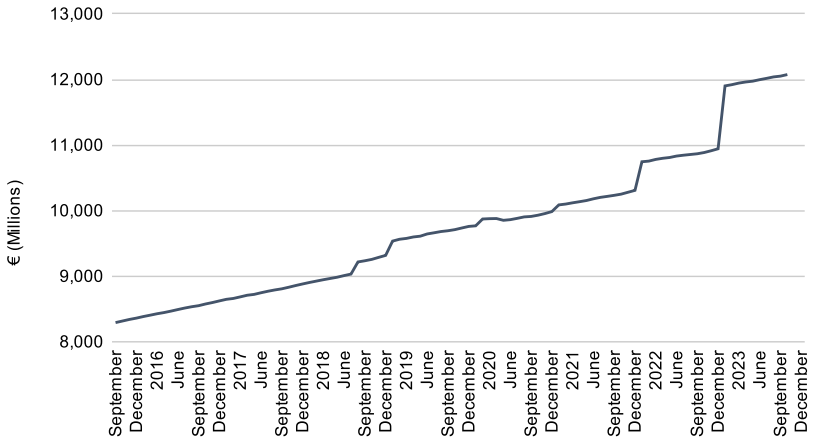
Figure 5: Income and expenses of the public pension system between 2008 and 2023, as a percentage of the GDP



Source: Data for September 2023 show a record €12.05 billion towards the payment of the ordinary monthly payroll of contributory pensions. This represents an increase of 10.9 per cent compared to the same month of the previous year.

51 'Boletín estadístico 12: Administraciones de Seguridad social', *Banco de España*, n.d. (https://www.bde.es/webbe/es/estadisticas/otras-clasificaciones/publicaciones/boletin-estadistico/capitulo-12.html).

Figure 6: Evolution of pension spending in Spain (total cost)

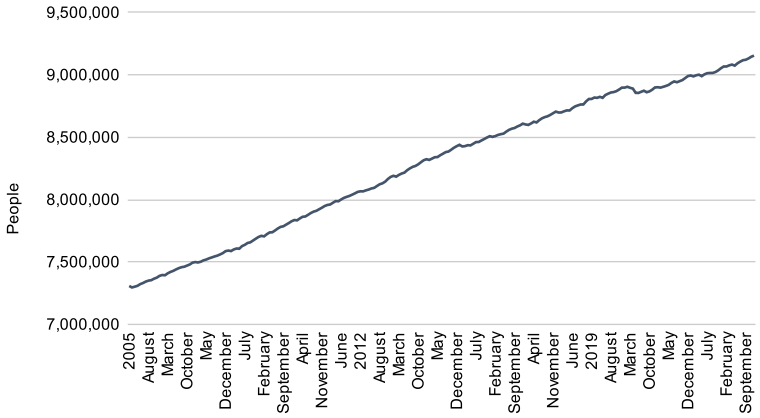


Source: Ministerio de Empleo y Seguridad Social (2023)[52]

This debt, moreover, accumulates while the total number of pensions grows. As of September 2023, according to the Ministry of Employment and Social Security, there are more than 9 million pensioners.[53] Not only is the number growing, but so is the average pension amount, which stands at €1,376.4. Predictably, according to the demographic projections made by the Bank of Spain, both variables will continue to grow in the coming years (Hernández et al. 2017). In other words, the situation will only worsen.

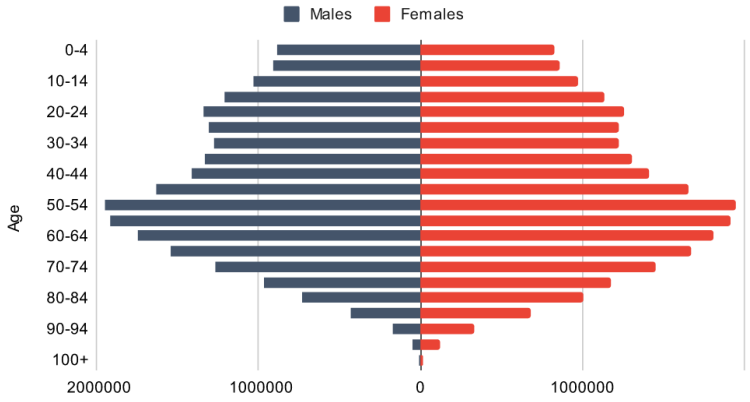
52 'Epdata', *Ministerio de empleo y seguridad social*, 2023 (www.epdata.es).
53 'Sitio web de la seguridad social', *Seguridad Social*, 2023 (https://www.seg-social.es/wps/portal/wss/internet/Conocenos/HistoriaSeguridadSocial).

Figure 7: Evolution of the number of pensioners in Spain



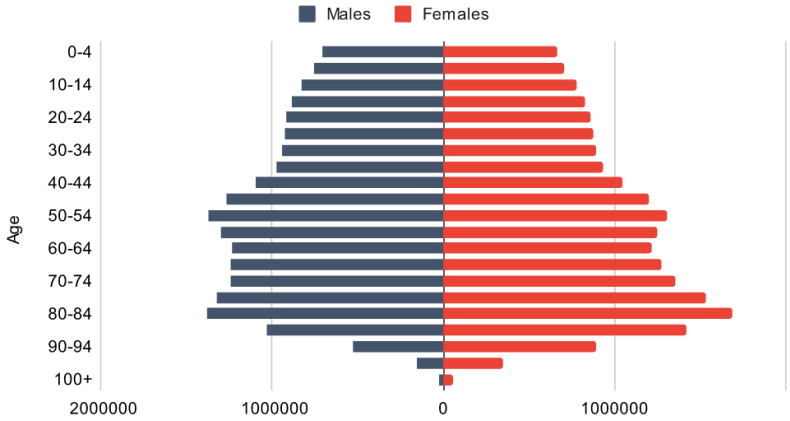
Source: Ministerio de Empleo y Seguridad Social (2023)[54]

Figure 7a: Demographic pyramid in 2030 (projection);



54 'Epdata', *Ministerio de empleo y seguridad social*, 2023 (www.epdata.es).

Figure 7b: Demographic pyramid in 2060 (projection)



Source: Ministerio de Empleo y Seguridad Social (2023)

This is due, among other factors, to the unemployment rate, which is high in Spain due to the rigidities of the labour market and high replacement rate. According to the OECD Pensions at a Glance report (2021), Spain has a net replacement rate of 80 per cent, which is much higher than the OECD average of 62 per cent.

Policy recommendations

The following list of policy recommendations reflects the different realities in participating countries, as well as common themes that ought to be considered in the EU in general.

France

- Diversify the sources of pension funding by relying more on capitalisation.
- Rebalance how pensions are financed, with a generalisation of collective capitalisation in France on the model of the ERAFP for civil servants or the CAVP for pharmacists.

Greece

- Allocate supplementary pension contributions to individual investment accounts under Pillar 2.
- Abolish the state monopoly on supplementary insurance and liberalisation through a competitive market that leads to higher returns and feeds the real economy for investment.
- Reduce the restrictions in the country's immigration policy and increase international agreements enabling jobs to be performed by employees from non-EU countries.

Italy

- Abandon any deviation from the 2011 Fornero reform, then eliminate Quota 103.
- Remove the annual cap on the deduction of contributions to supplementary pension funds.
- Eliminate the taxation on returns from supplementary pension funds.

Romania

- Eliminate exemptions to Pillar 2 contributions for 1 million employees in the private sector.
- Increase Pillar 2 contributions – up to 6 per cent of the gross salary.
- Abolish special pensions and privileges and ensure stability, predictability, and equal treatment for all within the pension system at large.
- Build a coalition between contributors and private pension fund administrators.
- Eliminate restrictions on the information that private pension funds are allowed to communicate. Communications should include information about the employee's current contributions, as well as expected and potential future benefits.
- Publish official annual estimates of the implicit debt of the public pension system.

Spain

- Change to a three-pillar system.
- Provide incentives for voluntary savings through Pillar 3.

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(1995) uccessLegislative decree 335/1995, Italy.

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Chapter 4: Modernising Europe's oldest industry: How to bring agricultural policies into the 21st century

By Christian Năsulea, Executive Director of IES Europe

Summary

- Across Europe, a lack of evidence-based policymaking concerning agriculture is apparent, highlighting the need for more comprehensive and data-driven approaches to address agricultural challenges effectively.
- Balancing innovation, environmental concerns, and traditional farming methods remains a challenge for EU agriculture, necessitating a careful approach to achieving sustainability while embracing technological advancements.
- Adopting evidence-based policymaking in agriculture offers substantial benefits, including the potential to streamline operations, enhance productivity, and ensure more targeted and efficient resource allocation.
- Roadblocks to widespread evidence-based policymaking in agriculture often stem from bureaucratic complexities, lack of comprehensive data, and a hesitancy to depart from traditional, often less effective, methods.
- Romanian dairy farming faces turmoil due to subsidy disruptions, raising concerns regarding how consistently the sector will receive support from the Ministry of Agriculture and Rural Development in the future.

- Agricultural dynamics in Czechia have been impacted by EU policies, especially under the Common Agricultural Policy (CAP), which significantly influence the nation‘s farming landscape and economic trajectory.
- Spain‘s agricultural sector grapples with two significant challenges – extreme weather shifts affecting yields and a decreasing interest among younger generations in pursuing careers in farming, impacting the sector‘s labour force.
- The impacts of climate change have caused erratic weather patterns that lead to yield variations, leading farmers to adopt climate-resilient agricultural practices.
- EU and Spanish regulations present challenges for agriculture in Spain. These include environmental laws such as the Nature Restoration Law, labour reforms that affect the agricultural workforce, and regulations pertaining to fertiliser application and digital record-keeping.
- The cultivation of genetically modified (GM) maize in Spain has resulted in notable benefits, such as increased yields and reduced environmental impact from a decrease in insecticides use, fuel consumption, and greenhouse gas emissions.

Introduction

Agriculture in the European Union (EU) is regulated by the Common Agricultural Policy (CAP), which is a set of EU laws and policies that aim to ensure a stable and sustainable agricultural sector in the EU. The CAP covers a wide range of areas, including:

- Supporting farmers‘ incomes
- Providing food security
- Enhancing environmental protection
- Promoting animal welfare
- Stimulating rural development

The CAP is funded by the EU budget, and it is the largest budget item, accounting for approximately 40 per cent of the EU‘s total spending. It is implemented by the EU‘s 27 member states, which have some flexibility in adapting the policy to suit their national circumstances. However, member states have limited influence over the legislation once it is adopted at the EU level. At the EU level, the CAP is primarily a legislative framework that outlines the policy’s objectives, principles, and funding mechanisms. This overarching framework is established through negotiations and agreements among EU member states, ensuring a uniform approach to agricultural policy across the bloc. However, the implementation of the CAP’s specific measures and practices is delegated to individual member states, allowing them to adapt the policy to their unique agricultural landscapes and challenges.

Since 2021, 15 per cent of the budget can be reallocated at the national level between Pillar 1 (the European Agricultural Guarantee Fund – EAGF) and Pillar 2 (the European Agricultural Fund for Rural Development –

EAFRD), i.e., between agriculture support and rural development. Despite the recent push to reduce market distortions caused by price controls, quantitative restrictions, and subsidies, Pillar 1 still has a higher distortive impact compared to Pillar 2. Like other EU policies, the CAP is subordinate to the environmental policy, referred to as 'the third Pillar'. Its costs are seldom estimated or explicitly mentioned while evaluating CAP impact.[55]

EU countries can also implement other subsidy schemes at the national level in addition to those under CAP. Subsidies are a key component of EU agriculture, and many of the current challenges that European agriculture is facing have to do with subsidies.

Subsidies

The CAP and other subsidy schemes at the national level can distort market prices and create inefficiencies in the economy. By artificially suppressing the price of agricultural products, subsidies can discourage the efficient allocation of resources and hinder market-oriented innovation. Both types of subsidies can significantly distort global markets, making it difficult for farmers in developing countries to compete. European agricultural products, which are sometimes sold below the cost of production, may undercut local markets in these countries, harming their domestic agricultural sectors.

Further, subsidies are often distributed inequitably, with a significant portion going to the largest and wealthiest farms, which have the resources and personnel needed to deal with the bureaucracy involved in accessing the funds. This can stifle competition and innovation in the sector. While efforts have been made to improve the effectiveness of CAP in supporting smaller, family-run farms,[56] CAP remains highly complex and imposes a heavy bureaucratic burden on farmers. The process of applying for subsidies and ensuring compliance with various regulations can be daunting, especially for smaller farmers. Overall, this has the potential to exacerbate income inequality in the agricultural sector.

CAP, being a policy that spans diverse regions across the EU, sometimes fails to adequately consider the specific needs and conditions of local agricultural sectors, which can lead to inefficiencies and imbalances in

55 'The Common Agricultural Policy', European Union, 2023 (https://www.consilium.europa.eu/en/policies/cap-introduction/).
56 'Common Agricultural Policy 2023–2027', European Commission, 2023 (https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/cap-2023-27_en).

the markets of beneficiary countries. Insulating farmers from market signals through subsidies fosters inefficiencies and a lack of innovation, as there are fewer incentives for farmers to adapt to changing market conditions and consumer preferences. An over-reliance on subsidies can make farmers dependant on state support, mask underlying problems in the agricultural sector, and delay necessary reforms.

The subsidy system can artificially inflate land prices, making it more difficult for new and young farmers to enter the market. This can also lead to land concentration, where large agribusinesses control extensive areas of land.

Critiques of the current policy underline CAP's inability to address environmental issues effectively (Pe'er and Lakner 2020). They highlight a lack of progress in reversing biodiversity loss, combating soil degradation, and reducing greenhouse gas (GHG) emissions, which have remained stable instead of declining (Scown et al. 2020).

Furthermore, there are legitimate concerns regarding the adverse effects of subsidies on the environment. Subsidies can encourage the overproduction and overuse of inputs such as fertilisers and pesticides. They can contribute to soil degradation, water pollution, and biodiversity loss by encouraging monocultures and discouraging crop rotation.

Subsidies can also have negative consequences for human health. They often favour the production of certain crops over others, which can lead to a lack of diversity in food production and contribute to nutritional imbalances. In addition, subsidising unhealthy foods and ingredients can contribute to public health problems such as obesity and diabetes.

Finally, administering grant programmes can be complex and costly, and, therefore, inefficient. The complex bureaucracy involved in accessing subsidy schemes also creates opportunities for fraud and corruption.

A ban without scientific evidence

In the EU, the following 16 countries have banned genetically modified organisms (GMOs):[57] France, Germany, Austria, Greece, Hungary, the Netherlands, Latvia, Lithuania, Luxembourg, Bulgaria, Poland, Denmark, Malta, Slovenia, Italy, and Croatia.

57 'Countries that ban GMOs 2024', *World Population Review*, 2023 (https://worldpopulationreview.com/country-rankings/countries-that-ban-gmos).

A company wishing to place a new GM food or feed product on the EU market must submit a dossier demonstrating that the product is safe for human and animal health and the environment. The studies must comply with the provisions of Regulation (EC) no. 503/2013 regarding authorisation requests for GM food and feed products.

The regulation provides the requirements that must be met when submitting an application for a GM food product or type of feed, including the studies that must be carried out and the protocol that must be followed when carrying out the studies.

After receipt, the file is evaluated by the European Food Safety Authority (EFSA) in collaboration with the scientific bodies of the member states. The EFSA can ask the company for additional studies or data if it is not satisfied with what has been submitted. The EFSA completes a risk assessment and issues an opinion on the safety of the new GM food or feed. A one-month public consultation is then launched to give the public the opportunity to comment on the EFSA‘s opinion before any decision on risk management is taken.

In addition to the EU‘s regulatory framework, member states such as Romania have also adopted a number of national regulations on GMOs. These regulations cover issues such as the traceability of GMOs, the labelling of GMO-containing products, and the monitoring of the presence of GMOs in the environment.

At the time of writing this paper, 98 GMOs have been authorised in the EU, with 11 more pending authorisation.[58] Since Regulation (EC) 1829/2003 was passed, authorisations have expired for seven GMOs, and three GMOs have had their authorisations marked for withdrawal. The withdrawals were all triggered by the seed producers’ decision not to renew their authorisations.

The EU has denied authorisation for certain GMOs in the past, most often due to a lack of safety information. The following chronological list is indicative of the authorisations denied over the last three decades.

1996: The Flavr Savr tomato was the first GMO to be refused authorisation by the EU. It was developed by Calgene Inc. The EU rejected the application

58 ‘EU register of authorized GMOs’, EU Commission, 2023 (https://webgate.ec.europa.eu/dyna2/gm-register/).

on the grounds that there was insufficient evidence to show that the tomato was safe for human consumption.

1997: The EU also refused to authorise the cultivation of Bt maize, which is a type of maize that was genetically modified to serve as a natural insecticide. The EU‘s decision was based on concerns about the potential effects of Bt maize on non-target insects, such as butterflies.

1998: The EU refused to authorise the cultivation of herbicide-tolerant soybeans, which were genetically modified to be resistant to certain herbicides. The EU‘s decision was based on concerns about its potential environmental impact – for example, the potential for its use to lead to the spread of herbicide-resistant weeds.

2001: The EU refused to authorise the cultivation of Roundup Ready soybeans, which are a type of herbicide-tolerant soybeans that are also resistant to the herbicide Roundup. The EU‘s decision was based on concerns about the potential environmental impact, as well as the likelihood of cross-pollination with non-GM soybeans.

2003: The EU approved the cultivation of maize MON810, which is a type of maize that has been genetically modified to produce a natural insecticide. However, the approval was conditional on a number of measures to be taken to mitigate its potential risks.

2005: The EU refused to authorise the cultivation of MON810 maize in two member states – Austria and France. The EU‘s decision was based on the principle of subsidiarity, whereby member states have the right to oppose the cultivation of GMOs within their territory.

2008: The EU approved the cultivation of Amflora potato, which is a type of potato that had been genetically modified to contain lower levels of starch. However, the approval was conditional on several measures to be taken by producers to ensure that the potato would not be used for human consumption.

2010: The EU refused to authorise the cultivation of Amflora potato in Germany. The EU‘s decision was based on concerns about its potential environmental impact, as well as the likelihood of cross-pollination with non-GM potatoes.

2012: The EU refused to authorise the cultivation of MON810 maize in Spain. The EU‘s decision was based on the principle of proportionality, which means that the measures taken to protect against GMOs should be proportionate to the risks posed by GMOs.

2019: The EU refused to authorise the cultivation of 15 new GM crop applications. The EU‘s decision was based on a number of factors, including concerns about potential risks to human health and the environment, as well as the need for more data assuring the safety of GM crops.

To date, there have been no documented cases of GM crops causing serious health issues in humans. This could be because GM crops undergo rigorous safety assessments before being approved for commercial use. These assessments include toxicological studies, allergenicity studies, and environmental impact studies.

There have been some concerns about the potential allergenicity of GM crops, but these concerns have not been backed by scientific evidence. In fact, a 2014 review of scientific literature found that there was no evidence that GM crops were more likely to cause allergies than conventional crops (Nicolia et al. 2014).

There have also been some concerns about GM crops potentially harming human health by disrupting the gut microbiome. The gut microbiome is a complex community of bacteria that plays an important role in human health. However, a 2016 study found that feeding mice a diet of GM corn did not have any significant effect on the composition of their gut microbiome (Domingo 2016).

Overall, the scientific evidence does not support the claim that GM crops are harmful to human health. While there are still some potential concerns regarding the safety of GM crops, these are outweighed by the potential benefits, such as increased yields, improved nutrition, and reduced use of pesticides.

The strict regulatory framework has made it more difficult and expensive for developers to develop GMO crops. This has discouraged investment in GMO research and development in the EU. Consequently, EU farmers have limited access to GMO technologies compared to farmers in other parts of the world.

The situation at the national level

Czechia

Subsidies

The Czech government, through its ministers, has unequivocally declared itself in favour of a rapid reduction in subsidies, and not only in agriculture. In its current form, the consolidation package includes reductions in national subsidies totalling approximately CZK 54.4 billion (about EUR 2.21 billion) across all ministries. We suggest that the government continues this trend in the coming years and reduce agricultural subsidies, ideally to the point of abolishing them altogether.

There are many reasons for this approach. In purely economic terms, subsidies create market distortions, and those operating in the market engage in unproductive activity while applying for them. Eliminating the subsidy system could potentially free up time for businesses to focus on improving their operations. Several state agencies and departments of ministries that heavily rely on the subsidy system as a source of funding would be forced to engage in economic life more productively.

The abolition of national subsidies is unlikely to lead to the loss of food self-sufficiency. Globalisation and access to the common European market guarantee that the Czech Republic will not face agricultural shortages. Recent events, such as the COVID-19 pandemic, and the Russian invasion of Ukraine and the associated disruption of supply chains, have raised concerns that everyone would need to fend for themselves in the event of more widespread problems. While these fears may certainly be well-founded, any promotion of the idea that everything can be grown at home

and that countries do not necessarily need to rely on international trade is not only false but also dangerous.[59] Attempts to achieve food self-sufficiency harm domestic consumers, reduce food quality, and primarily help dominant market actors (Pánek et al. 2020).

Table 1: Top ten recipients (companies) of national subsidies in 2022

Name of entity	Subsidy (in thousands, CZK)	Sales (in thousands, CZK)	Profit after tax (in thousands, CZK)	Employees
Vodňanské kuře, s.r.o.	93,676	1,085,392	21,252	99
Mydlářka a.s.*	83,022	1,797,852	71,691	183
XAVEROV, a.s.	79,588	1,011,779	804	371
AGROMORAVIA, a.s.**	61,283	39,942	-20,839	25
PROAGRO Nymburk a.s.	59,287	1,129,673	61,811	144
ANIMO Žatec, a.s.	54,158	543,220	-4,445	129
MACH DRŮBEŽ a.s.	53,887	1,366,948	27,292	296
SPV Pelhřimov, a.s.	51,105	773,848	-9,986	143
OLMA, a.s.	49,384	4,417,542	215,778	469
Mlékárna Hlinsko, a.s.	45,990	3,616,478	162,944	278

Source: Compiled from State Agricultural Intervention Fund (SZIF) reports.[60]

Notes: * Number of employees in 2021; ** The company's production was severely disrupted by a tornado which hit South Moravia on 24 June 2021. The grant was intended to mitigate its impact.

59 For more information on this topic, read our article, 'Food self-sufficiency: an analysis of a defeated bill', *Mythical Self-Sufficiency in Reality* (https://4liberty.eu/whavuhoo/files/MARTIN_PNEK_FOOD_SELF-SUFFICIENCY_AN_ANALYSIS_OF_A_DEFEATED_CZECH_BILL.pdf).

60 'Annual Report for 2022', SZIF, 2022 (https://www.szif.cz/cs/CmDocument?rid=%2Fapa_anon%2Fcs%2Fdokumenty_ke_stazeni%2Fsystemova_navigace%2Fo_nas%2Fvyrocni_zpravy_szif%2F1689836942110.pdf).

In Table 1, we can see the largest recipients of national subsidies in the Czech Republic for the fiscal year 2022. Since it is a list of the largest recipient companies, it does not include the Czech Beekeepers Association (CZK 104 million, the largest recipient) and the Union of Sheep and Goat Breeders (CZK 60 million, the sixth-largest recipient).

The top recipients of subsidies are, therefore, companies with millions of dollars in sales and tens to hundreds of employees. These companies are able to dedicate at least a part of their workforce to filling out grant applications or alternatively have sufficient resources to outsource this activity. Small businesses are often not able to do this; therefore, subsidies often go to the largest players in the market instead of small entities that they should primarily target. It is interesting to note that five of the top ten companies in the list are owned by the Agrofert concern of former prime minister and sixth-richest Czech, Andrej Babiš.

In total, approximately CZK 5.3 billion (about EUR 215 million) in national subsidies were paid out to the agricultural sector in the 2022 fiscal year, according to the State Agricultural Intervention Fund, which is responsible for the payment of subsidies.[61]

Table 2: Top ten grant programmes of disbursed funds

Programme	Disbursed funds (CZK)	Number of recipients
Aid for the rehabilitation of pig and poultry holdings	1,562,111,062	869
Support for the processing of agricultural products	641,035,623	52
Transitional national aid*	549,148,981	24,479
Improving living conditions in pig farming	356,101,511	209
Improving living conditions in dairy farming	353,649,851	872
Improving living conditions in poultry farming	321,775,937	172

61 ‘Annual reports’, SZIF, no date (https://www.szif.cz/cs/vyrocni-zpravy).

Maintaining and improving the genetic potential of farm animals	262,300,967	175
Aid for the participation of milk producers and processors	195,530,636	557
Improvement of field and special crops (breeding)	115,528,918	32
Support for beekeeping	104,873,531	1

Source: Compiled from SZIF reports.[62]

Note: Under this subsidy title, one can apply for payments for agricultural land, suckler cow farming, sheep or goat farming and more.

Table 2 shows the top ten grant programmes that have paid out the most money during 2022. While this support would have undoubtedly helped farmers, it begs the question of whether farmers themselves are sufficiently incentivised to, for example, protect their animals from disease or gradually improve their living condition without this support. It is worth recalling the data from Table 1, according to which the largest recipients of Czech corporate subsidies received more than CZK 630 million in 2022, which is approximately 12 per cent of the total amount allocated, or almost all the support in the agricultural products processing programme.

At first glance, a logical solution to the situation, where large market entities have better access to subsidies and can more easily obtain them, would be to set a limit on the size of companies that can be a subsidy recipients. However, such a system is unlikely to work, as companies, in an attempt to obtain subsidies, may, for example, create smaller entities to be able to access subsidies even if they are not formally entitled to them. For instance, refer to the case of Čapí Hnízdo (Stork's Nest).[63] We, therefore, propose the abolition of all national agricultural subsidies or their reduction to a minimum, paid only to the smallest market entities.

62 'List of recipients of subsidies from national sources', SZIF, no date (https://www.szif.cz/cs/seznam-prijemcu-nd).

63 Čapí hnízdo (Stork's Nest) is a famous Czech farm that got a subsidy of CZK 50 million. The company was purposedly taken out of the Agrofert group (Andrej Babiš's company) to get the subsidy.

Let us now briefly focus on the subsidies that Czech agriculture receives under the European CAP. In its strategic plan for 2023–2027, CAP aims to ensure a smart, sustainable, competitive, and resilient agricultural sector. The impact of the existing policy on the Czech Republic is low, but the country still has some room to manoeuvre with regards how it uses EU funds. Given that it is virtually impossible to remove CAP subsidies, unlike national subsidies, it is suggested that the Czech government redirect them to areas that would help Czech agriculture be more efficient and sustainable.

According to a 2019 survey, only one-fifth of farmers in the Czech Republic are investing in innovation, digitisation, and robotics, and we can assume that these are likely to be the largest farmers.[64] CAP supports the adoption of precision farming, or farming that involves the use of autonomous harvesting vehicles and other modern agricultural technologies. By redirecting some of these CAP subsidies to new farming technologies, the Czech Republic can significantly increase productivity, reduce operating costs, and minimise environmental impacts. For example, a Deloitte study estimates that automation and robotics could increase agricultural productivity by up to 132 per cent over 16 years (Deloitte 2018). Another trend in sustainable and efficient agriculture is the use of vertical farms, which are less burdensome on the environment. However, the EU's current stance hinders the greater development of this sector, as vertical farms are not considered by the EU to be 'organic farming'.[65]

Employment and migration

A long-term problem in Czech agriculture, similar to other sectors of the Czech economy, is the lack of labour force. However, the problem is more acute in the agricultural sector than in other sectors, mainly because agriculture has not been able to offer higher wages for a long time. The average wage in the sector is about CZK 10,000 lower than the average for the whole economy.[66] Beginning in 2024, the Ministry of Industry and Trade plans to increase the current quota for foreign workers by up to

64 'Farmers are further ahead in digitization than industry (in Czech)', Asociace malých a středních podniků a živnostníků České republiky (AMSP ČR), 20 August 2019 (https://amsp.cz/zemedelci-jsou-v-digitalizaci-dale-nez-prumysl/).

65 'What if we grew plants vertically?', European Parliament, 2022 (https://www.europarl.europa.eu/RegData/etudes/ATAG/2022/737130/EPRS_ATAG_737130_What_if_vertical_farming_final.pdf).

66 'Wages, labour costs – time series (in Czech)', Czech Statistical Office (https://www.czso.cz/csu/czso/pmz_cr).

20,000.[67] At the same time, the government also expects that another 20,000 Ukrainian refugees will enter the workforce. According to current estimates, there is a shortage of 250,000–300,000 employees in the Czech Republic. Therefore, this expected increase in quotas, and the employment of refugees, will not be nearly enough. Yet, it is not clear why the number of new arrivals is being set at this level and not at a level that would sufficiently cover the current demand for skilled and unskilled migrant labour. This begs the question of why these quotas are being set at all. From our point of view, the state's immigration policy needs to be completely relaxed in favour of people who are interested in working in the Czech Republic, and if this is not possible for whatever reason, the quotas should be increased sufficiently to provide relief to the overheated labour market.

The literature on the positive impact of economic migration on the host country is rich. Probably the largest study that has looked at the effects of immigration on the labour market and the economy as a whole is *The Economic and Fiscal Consequences of Immigration* (National Academies of Sciences, Engineering, and Medicine 2017). The book looks at the effect of immigration, primarily on the US economy, and surveys the available literature on the subject in detail. Yet, its conclusions are generally applicable, albeit with minor limitations, such as labour laws that vary across countries.

In the Czech context, we can assume that low-skilled migrants are likely to complement the existing Czech workforce in most cases. This suggests that they would primarily occupy jobs that Czech workers are not currently interested in. If immigrants and native workers specialise in different occupational activities, the likely outcome is an increase in wages and the creation of new jobs. Conversely, if they compete for the same jobs, wages and job opportunities for native workers may be negatively affected in the short term. Furthermore, foreign workers may also help to reduce the prices of certain types of goods and services, such as home care and construction (National Academies of Sciences, Engineering, and Medicine 2017).

With regard to economic growth, which is currently rather stagnant in the Czech Republic, immigration can contribute to long-term economic

67 'More qualified employees for Czech companies. The government has approved an increase in quotas for foreign workers' [Press Release] (in Czech), Ministry of Industry and Trade, 18 October 2023 (https://www.mpo.cz/cz/rozcestnik/pro-media/tiskove-zpravy/vice-kvalifikovanych-zamestnancu-pro-ceske-firmy--vlada-schvalila-navyseni-kvot-pro-zahranicni-pracovniky--277440/).

expansion by ensuring the growth of the labour force. This will, of course, help the Czech Republic beyond the agricultural sector, as the ageing of the Czech population is a long-term problem affecting the whole of society. Immigrants can also contribute to capital formation and innovation, thereby influencing the pace of economic growth. They also play a significant role in human capital development, scientific progress, and innovation (National Academies of Sciences, Engineering, and Medicine 2017).

Romania

Romania oscillates between the sixth and seventh place in terms of total agricultural output of the EU.[68] Its 12.8 million hectares (ha) of agricultural land (8.2 per cent of EU agricultural land (EuroStat 2022b)) is mostly high quality and situated in a temperate climate (Table 3).

Table 3. Utilised agricultural areas by different size farms (hectares)

	2010	2013	2016	2020
Very small (<2 ha)	1,718,360	1,584,500	1,539,760	1,315,820
Small (2–20 ha)	4,011,830	4,090,210	4,018,360	3,451,560
Medium size (20–100 ha)	1,067,550	1,080,670	951,240	1,890,590
Large (>100 ha)	6,508,390	6,300,460	4,507,120	6,104,850
Total	**1,3306,130**	**1,3055,850**	**1,1016,480**	**1,2762,830**

Source: Eurostat (2023).

The fall of the communist regime was followed (in the early 90s) by a drop in production caused by uncertainties regarding regulatory and property rights following land restitution. One undesirable side effect of the slow restitution process was a sharp reduction in the size of the average farm; another was the abandonment and deterioration of irrigation infrastructure, which left Romanian agriculture excessively vulnerable to weather hazards.

68 '2023, record year for Romanian agriculture (in Romanian),' Profit.RO, 8 November2023 (https://www.profit.ro/povesti-cu-profit/agribusiness/infografic-2023-an-record-pentru-agricultura-romaniei-21376310)

Further, the partial destruction of the logistical chain added to shortages in storage and processing facilities.

Following the 'lost decade' of the Romanian transition, a process of consolidation started and continues until today. The average size of the farm was 3.45 ha in 2010 and 4.42 ha in 2020, which is still very low. However, the average size of farms owned by legal persons is 194.78 ha.[69] This substantial difference in farm size can be attributed to several factors, including the privatisation of state-owned land in the 1990s, which disproportionately favoured large landowners, and the preferential access to credit and other resources enjoyed by legal entities. There is an enormous potential for growth in farm size and, consequently, in agricultural productivity, which is still about half of the EU average. Land prices (for either acquisition or rental) are in the mid-range compared to the rest of the EU; it is lower than in Poland and the Czech Republic and slightly higher than in Bulgaria and Hungary (EuroStat 2022a).

The historical legacy of communist agriculture has made Romanian farmers extremely suspicious of any form of association, but this reticence is fading away, thanks to demographic changes and the multiplication of success stories. Romania has the highest rural population and the highest number of small farms in the EU, many of whom practise subsistence agriculture oriented towards self-consumption and disconnected from markets (EuroStat 2022b). As in other EU countries, the agricultural population is ageing; young people have little interest in agriculture, a phenomenon amplified by the significant difference in living standards between urban and rural areas.

Subsidies and chaos in the Romanian dairy sector

Romanian dairy cows typically produce approximately 5,000 litres of milk per year, which is significantly lower than the EU average of 7,000 litres per year.[70] This is due to a number of factors, including poor genetic stock, inadequate feeding practices (partially due to a lack of grain availability for dairy cows due to heavy subsidisation of grain production for human consumption), and lack of access to modern milking equipment. Subsidies meant to solve problems create additional challenges, which the government then tries to solve using more subsidies.

69 'How much agricultural land does Romania still have? (in Romanian)', Agrimanet, 25 March 2022 (https://agrimanet.ro/ce-suprafata-agricola-utilizata-mai-are-romania/).

70 'Agricultural production statistics 2000–2022,' FAO, 27 December 2023 (https://www.fao.org/food-agriculture-statistics/data-release/data-release-detail/en/c/1675061/).

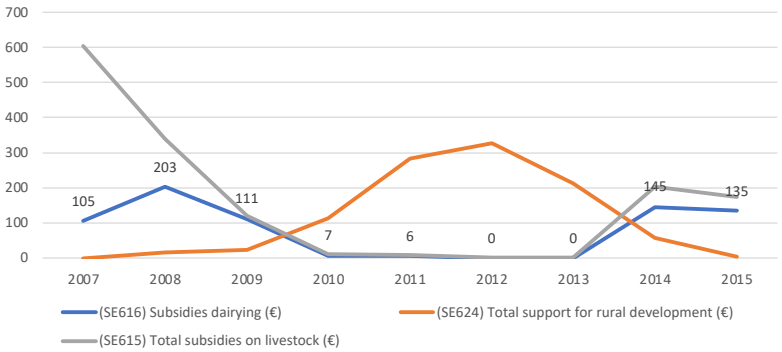
A study looking at the effect of CAP subsidies on productivity (Alexandri et al. 2020) shows that in the context of Romanian farms, subsidies do not enhance productivity. This holds true for farms of all sizes and types, with the sole exception being medium-sized dairy farms. In the case of large farms, subsidies create further distortions, as farmers expand their land holdings, motivated by the fact that the subsidies received per acre exceed the rental value of the land.

The Romanian government is constantly reviewing and revising its subsidy system to "ensure that it is effective in supporting the livestock sector"[71]. The specific numbers of animals for which subsidies are given can vary from year to year. The amount of subsidy can also vary depending on the animal type and the region.

Redirection of subsidies can create uncertainty and disruptions for farmers. This can make it difficult for farmers to plan for the future and maintain a healthy stock.

For instance, subsidies paid out for dairy cows in Romania varied significantly between 2007 and 2015 due to a temporary emphasis on rural development, as can be seen in Figure 1.

Figure 1: Subsidies for dairy cows in Romania, 2007-2015



Source: FADN Public Database (2023).

71 Direct payments coupled to income in the livestock sector (in Romanian),' APIA (https://apia.org.ro/planul-national-strategic-2023-2027-pns-al-romaniei/interventii-in-sectorul-zootehnic/plati-directe-cuplate-pentru-venit-in-sectorul-zootehnic-scvz/)

Such large, unexpected changes in subsidy policy suggest that, for instance, many farmers either sold off or slaughtered huge numbers of their livestock in 2010. This gave rise to further irregularities in the subsidy payouts that same year, as some farmers were eligible for subsidies for animals they no longer had.[72]

It should also be noted that subsidy payment delays created additional problems for farmers during that same period.

At the national level, the relevant government agencies are aware of these problems and have made attempts to address them. Moving forward, the Ministry of Agriculture and Rural Development (MARD) intends to be more consistent in its allocations, which should lead to less turmoil for dairy farmers (Table 4).

Table 4. Anticipated subsidies for dairy cattle, 2023–2027

		2023	2024	2025	2026	2027
Subsidy / unit	**(Feb 2022) EUR / Head**	330.33	325.25	325.5	320.95	327.05
	(Aug 2022) EUR / Head	338	342.06	347.47	351.53	361.01
Planned results	**(Feb 2022) Heads**	280,000	285,000	290,000	296,000	300,000
	(Aug 2022) Heads	300,000	300,000	300,000	300,000	300,000
Total annual budget	**(Feb 2022) EUR**	92,492,400	92,696,250	94,395,000	95,001,200	98,115,000

Source: Agrimanet (2023).[73]

72 'The state also gives 180 million euros in subsidies to those who sold their cows (in Romanian)', *Ziarul Financiar*, 31 January 2010 (https://www.zf.ro/eveniment/statul-da-180-mil-euro-subventii-si-celor-care-si-au-vandut-vacile-5462878).

73 'Subsidies for the livestock sector 2023–2027 (in Romanian)', Agrimanet, 15 August 2023 (https://agrimanet.ro/subventii-pentru-sectorul-zootehnic-2023-2027/).

It remains to be seen if agricultural policies with regard to subsidies will become more consistent. These good intentions are already losing ground to new priorities, such as improving the gender balance and climate tracking, or to older ones, such as rural development.[74]

Researchers focusing on EU subsidies and dairy farming have warned about the distortive effects of subsidies in general (Ilie et al. 2020) and for Romania's market in particular (Sandu 2014).

Unfair competition with Ukrainian grains

Following Russia's invasion of Ukraine, the blockade of Ukrainian ports on the Black Sea by the Russian military fleet severely disrupted Ukraine's grain exports for over four months. A deal facilitated by the UN, Turkey, and Russia under the Black Sea Grain Initiative allowed exports to resume, but this agreement was abruptly terminated by Russia in July 2023. Consequently, neighbouring countries, including Romania, stepped in to aid Ukraine. Romania, through its port of Constanta, became a key transit route for Ukrainian grain, with 11.7 million tons shipped between January and October 2023.[75]

This influx of Ukrainian cereals into Romania has had significant agricultural and economic implications. While Romanian consumers have benefited from the availability of more affordable grain, the situation has fostered an environment of unfair competition for Romanian farmers. The lower production costs of Ukrainian grains, coupled with their exemption from taxes, customs duties, and stringent EU sanitary regulations, have led to an overall lowering of prices, which has naturally made these imports preferable to domestic produce. Consequently, intermediaries and buyers opted for the more cost-effective Ukrainian grains, adversely affecting the pricing and competitiveness of Romanian cereals. This scenario has been further complicated by the consequences of drought in Romania, rising energy prices, and the increase costs of soil fertilisers, which collectively resulted in a 50 per cent decrease in harvested corn compared to previous years.

74 'Key reforms in the new CAP', European Commission, 2020 (https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/cap-2023-27/key-reforms-new-cap_en).

75 'Romania's plan to boost Ukraine grain transit very achievable, minister says,' *Reuters*, 8 December 2023 (https://www.reuters.com/world/europe/romanias-plan-boost-ukraine-grain-transit-very-achievable-minister-says-2023-12-07/).

Romanian farmers protested against what they perceived as unfair competition from Ukrainian grain, which threatened the sustainability of their livelihoods. In response, the Romanian government provided financial support and tax relief and imposed temporary import bans on specific Ukrainian grains to protect domestic agriculture. In 2023, the European Commission provided financial aid to farmers affected across neighbouring countries, as un-tariffed Ukrainian imports led to an alleged EUR 200 million in losses for Romanian farmers alone.[76] Romania received an aid package of EUR 10 million in March 2023 and a further EUR 30 million in May 2023 to mitigate these impacts.

Despite these measures, Romanian farmers continue to face challenges. Although Romania has not imposed a complete ban on Ukrainian grain, temporary restrictions on certain imports were imposed in May 2023, only to be lifted on 15 September 2023. Since then, there have been no official bans, but Romanian farmers still express concerns regarding the ongoing impacts of importing Ukrainian grain for their businesses and the broader agricultural sector.

A primary concern in this scenario is the absence of accurate data regarding the actual quantities of Ukrainian grains being sold in the local market. Additionally, there are clear issues associated with unfair competition and the inefficient use of taxpayer funds to counteract these competitive imbalances. In a truly free market system, unencumbered by artificial distortions such as subsidies, tariffs, and stringent agricultural standards, such competition-related challenges would likely not arise to the same extent.

Genetically modified crops

In 1998, Romania was the first country in Europe to introduce GM crops. Between 1998 and 2007, Romania officially cultivated a Roundup Ready soy owned by Monsanto. In 2006, the GMO (soy) surface areas reached almost 140,000 hectares, a record still unsurpassed by any other country on the continent.[77]

76 'Romania receives from the European Commission compensation of only 10.5 million euros, much less than the 200 million euros estimated by the farmers to cover their losses (in Romanian)' *Econmedia,* 20 March 2023 (https://economedia.ro/romania-primeste-de-la-comisia-europeana-despagubiri-de-doar-105-milioane-de-euro-mult-mai-putin-fata-de-cei-200-milioane-de-euro-estimati-de-fermieri-pentru-a-si-acoperi-pierderile.html).

77 'Romania says resounding no to GMOs', ARC2020, 6 October 2015 (https://www.arc2020.eu/first-time-18-years-no-romanian-farmer-cultivated-gmos/).

When Romania joined the EU in 2007, it was forced to change its GMO policy, banning GM soy and authorising only those approved by the EU. MON810 maize, the only GMO authorised for commercial growing in the EU at the time, was thus the only option.

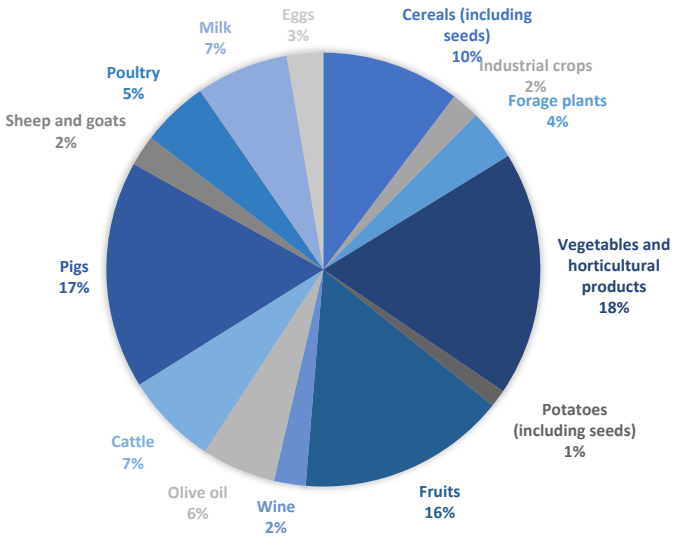
The regulation of GMOs in Romania is based on the EU's regulatory framework. This framework is intended to ensure that GMOs are assessed for their potential risks to human health and the environment before they are authorised for use.

Spain

According to the most recent available data, in 2022, the agricultural sector in Spain contributed 2.41 per cent to the Spanish GDP, which is higher than the 1.4 per cent average value added by the total EU agricultural sector to the EU's GDP. In terms of employment, in 2021, agriculture accounted for approximately 4 per cent of total employment, which is slightly lower than the average 4.1 per cent of agricultural employment in the EU.

Regarding agricultural output, crop output represented 59.2 per cent of the total output in Spain in 2022, while animal products accounted for the remaining 40.8 per cent. Spanish crops accounted for 7.5 per cent of the total agricultural output of the EU in 2022, while animal products constituted 5.2 per cent of the total European animal output. Figure 2 shows the main types of animal products and crops that Spain produces, including pigs, vegetables, horticultural products, and fruits. It is important to bear in mind this output distribution when considering and designing new agricultural policies.

Figure 2. Agricultural output per sector in Spain in 2022



Source: Economic accounts for agriculture, Eurostat, https://ec.europa.eu/eurostat/databrowser/view/aact_eaa01/default/table?lang=en

Spanish animal and crop production is exported primarily to other member states. For example, the EU was the main destination for Spanish agri-food exports in 2021, accounting for 63 per cent of the total agri-foods exported to the world. This means that the Spanish agricultural sector is highly exposed to regulations affecting member states, such as new regulations on food.

Background

Spain's accession to the European Union (EU) in 1986 marked a significant turning point in the country's agricultural sector. Spain quickly established itself as one of the primary beneficiaries of the Common Agricultural Policy (CAP), alongside France, receiving substantial funding and support aimed at fostering its agricultural activities. The CAP, during its early years, was primarily implemented through market support measures, which included mechanisms such as purchasing surplus agricultural products to stabilise markets. However, it paid farmers based on their supply, which caused discoordination between production and demand and created market distortions (Salmon 2002).

The CAP underwent crucial reforms with the MacSharry reform in 1992 and Agenda 2000. These reforms aimed to address the shortcomings of the previous system by shifting the focus to a mechanism of direct payments. Under this new framework, farmers in Spain and across the EU received income support that was decoupled from the volume of production. Volume restrictions and other measures were also introduced. These changes effectively reduced market distortions and increased the efficiency and productivity of Spain's agricultural sector (Gómez-Tello 2015). This transition allowed for a more market-oriented approach.

Despite the improvements brought about by CAP reforms, Spain's agricultural sector faces persistent challenges. There is a technology gap between the Spanish agricultural sector and key European countries. This is a notable challenge that impacts the sector's overall efficiency and competitiveness. One significant contributing factor to this gap is the prevalence of smaller farms in Spain compared to many other European countries. Smaller farms often face greater difficulties in adopting and investing in advanced technologies due to limited resources and economies of scale. Consequently, Spanish farmers are less likely to embrace automation, such as robotic farming systems, which have become increasingly common in larger, more mechanised European farms.

For instance, vertical farming, an innovative approach involving indoor cultivation of produce, is a cutting-edge technique that significantly enhances agricultural productivity. European nations such as the Netherlands are at the forefront of implementing this technology. However, in Spain, this technology is still in its early stages and requires substantial further development. The relatively small size of farms, attributed in part to regulations that hinder investment and scaling up, could be a factor impeding the advancement of this new technology. The implementation of vertical farming could potentially bridge the gap in competitiveness and productivity between Spain and the rest of Europe.

Additionally, Spain's agricultural sector has seen comparatively less investment in research and development than some of its European counterparts. This translates to fewer opportunities for innovation and the incorporation of cutting-edge technologies into farming practices. Spanish farmers are also less likely to employ precision agriculture technologies, such as GPS-guided tractors and drones, which can enhance crop management, reduce resource wastage, and increase yields. The limited access to capital, particularly for smaller and family-owned farms, serves

as a barrier to the adoption of these advanced tools and technologies, thereby exacerbating the technology gap between Spanish agriculture and the broader European landscape. Addressing this gap and continuing to adapt the CAP to the evolving needs of the Spanish agricultural sector remains a priority to further enhance competitiveness and sustainability.

Current status of the agricultural sector

Spanish agriculture is confronted with two pressing challenges – the increasingly erratic and extreme weather conditions brought about by climate change and the lack of generational replacement.

In recent years, Spain has experienced a series of extreme weather events, from prolonged droughts to devastating floods, which have had a profound impact on agricultural output (Jiménez-Donaire 2020). One notable example is the olive oil segment, which faced significant fluctuations in production due to weather-related issues in 2022. The unpredictability of weather patterns has caused yield variations, affecting both the quantity and quality of olive oil. Farmers are grappling with the need to adapt to these changing conditions, invest in climate-resilient agriculture, and explore new strategies to mitigate the risks posed by extreme weather events.

The unwillingness of younger generations to undertake agricultural labour is another important challenge that Spanish agriculture faces. Younger generations are increasingly drawn to urban opportunities and other professions, leaving a void in the agricultural workforce. This generational shift has the potential to disrupt the continuity of agricultural practices and knowledge transfer, endangering the future of the sector. As seen in Figure 3, there has been a considerable decrease in the share of farms managed by either male or female farmers aged below 35 years.

Figure 3. Share of farm managers in Spain aged below 35 years by gender

Source: Farm indicators by age and sex of the manager, economic size of the farm, utilised agricultural area and NUTS2 region, Eurostat, https://ec.europa.eu/eurostat/databrowser/view/ef_m_farmang/default/table?lang=en

Regulatory challenges

The agricultural sector in Spain is grappling with a growing array of regulatory challenges that have significant implications for the production of essential foods. In addition to the customary difficulties posed by factors such as pests, diseases, climatic variability, market fluctuations, escalating costs, and international competition, new regulatory complexities have emerged. These challenges originate within the EU, where a veritable legislative and bureaucratic tsunami is gaining momentum and proving increasingly onerous for the Spanish agri-food sector.

The EU has been implementing a series of regulations, directives, and decisions that seem to prioritise environmental and ecological considerations over the economic well-being of the agricultural sector. Farmers and agricultural workers appear to be most affected by these regulations, given their primary interest in preserving their livelihoods and ways of life.

One of these regulations is the Nature Restoration Law, approved in the European Parliament in July 2023,[78] which sets ambitious targets for the protection of terrestrial and marine areas. Besides, many of these targets appear to lack practical alternatives or accommodations. Yet another regulatory problem is the Sustainable Use of Pesticides Directive.[79] It has laid out ambitious targets, including a 50 per cent reduction in pesticide usage by 2030, a minimum 20 per cent reduction in fertiliser application by the same year, and allocation of 25 per cent of agricultural land to organic farming. This proposal also appears to lack viable alternatives and provides insufficient time for in-depth research and the exploration of other solutions, potentially hampering agricultural production. According to the University of Wageningen in the Netherlands (Bremmer et al. 2021), if this regulation is approved as currently drafted, there could be a substantial 20 per cent reduction in both vegetable and ornamental plant production, thereby raising consumer prices and undermining sustainability goals.

Spain is also facing its own share of regulatory challenges, distinct from those originating at the EU level. One of these challenges emanates from the delayed implementation of Cuaderno Digital, which intends to facilitate the transition from traditional analogue agricultural record-keeping. The adaptation has proven cumbersome due to data input complexities, prompting several postponements. This regulation is anticipated to take effect on 1 September 2024, affecting agricultural enterprises exceeding 30 hectares or those with more than 5 hectares of irrigated land or greenhouse cultivation. Smaller-scale agricultural operations have been granted an extension until 1 September 2025.

Furthermore, Spain has introduced a separate regulation, effective from 1 January 2024, aimed at promoting sustainable soil nutrition in agricultural lands. The primary objective is to reduce the environmental impact of fertiliser application and the use of other nutrient sources, advocating for more environmentally conscious and soil-friendly fertilisation practices among farmers. The implementation of this regulation introduces additional bureaucratic obligations as compliance is overseen by Cuaderno Digital, obligating farmers to diligently record their fertilisation activities across their crops, with a maximum allowable delay of one month.

78 'Nature restoration law', European Commission (https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law_en).

79 'Sustainable use of pesticides', European Commission (https://food.ec.europa.eu/plants/pesticides/sustainable-use-pesticides_en#sustainable-use-of-pesticides-directive).

The agricultural sector has also been highly affected by the 2022 reform of labour market regulations in Spain. The new labour regulation aims at reducing temporary employment and fostering indefinite term employment. However, most of the employment in agriculture, by the very nature of the activity, is temporary. Consequently, a year after the reform was implemented, contracts in the agricultural sector experienced a significant decline of 38 per cent. Affiliation to Social Security is stuck at 360,000 employees, as this reform has introduced more economic uncertainty among farmers.[80] These examples are indicative of the regulatory landscape in Spain, where the agricultural sector struggles with domestic regulations in addition to those imposed by the EU.

Despite these regulatory challenges, Spain stands out among its EU counterparts as the sole country, along with Portugal, which permits the cultivation of a specific GM maize. Currently, the EU maintains stringent and intricate regulations on GM products, with several member states leaning towards either a complete or partial ban on such items. The exclusive GM maize – IR maize – has been cultivated in Spain and Portugal since 1998. A recent research article underscores the remarkable success of this GM maize in Spain and Portugal over two decades, resulting in increased income for farmers due to higher yields, a notable 37 per cent reduction in insecticide spraying, a 21 per cent decrease in the environmental impact caused by these insecticides, and streamlined fuel use leading to reductions in water consumption and GHG emissions (Brookes 2019).

Spain also takes the lead in GMO cultivation in Europe, boasting over 100 hectares under cultivation. The Spanish experience serves as a compelling example of the myriad benefits that innovation and technology, particularly GM products, can confer upon an economy in terms of productivity and environmental impact.

80 'The Spanish countryside "pays" for the Government's labour reform: Hiring falls by 38% (in Spanish),' *Voz Populi*, 26 August 2023 (https://www.vozpopuli.com/economia_y_finanzas/campo-reforma-laboral-contratacion.html).

Policy Proposals

Ensure consistency and common sense

Going forward, future EU agricultural policies should be oriented toward a higher degree of liberalisation and remove inconsistent policies that harm the agricultural sector (Caccavello 2017). As advocated by Juma (2015) and Urban et al. (2016), tariffs should be significantly reduced, and direct support to farmers should be strongly decreased as most of the direct payments to farmers go to large corporate farms that practice rent-seeking.[81] Additionally, reviewing successful examples of agricultural policy reforms that support more free-market approaches might help. For instance, New Zealand's free-market reform in the 1980s, which led to increased productivity and innovation, can be studied (Caccavello 2017).

Reduce red tape

The new 2023–2027 CAP demonstrates a commendable commitment to evidence-based policymaking. However, there is a noteworthy concern regarding the potential imposition of rigorous environmental objectives, which could lead to excessive regulatory burdens and consequential adverse effects on agricultural productivity, as well as on the livelihoods of farmers and overall pricing dynamics. An evidence-based approach should primarily aim to address the genuine challenges faced by farmers, encompassing not only natural impediments but also those arising from regulatory constraints, with the overarching objective of simplifying operational procedures and improving farmers' quality of life.

81 'Corrupting CAP,' *Epicenter*, 11 July 2019 (https://www.epicenternetwork.eu/blog/corrupting-cap/).

Reform subsidy distribution

The EU should create a system that prioritises equitable support and provides it where it is necessary and effective. Supporting small farms that struggle due to limited resources while creating significant benefits for their communities is preferable to subsidising large producers, who would still be profitable and competitive in the global market even without the subsidies.

Reduce market distortions

Subsidising agricultural activity costs taxpayer money. By subsidising farmers, taxpayers are forced to cover a part of the cost of food they may not necessarily consume. Often, that subsidised food ends up being consumed outside the EU. Cheaper, subsidised food, sold outside the territory where it is produced, creates market distortions and is a form of unfair competition for local producers. This, in turn, means lower economic performance and worse economic prospects in the destination countries. If unfair competition ends up hurting the economy of a given country badly enough, the EU may decide to set up EU-funded programmes to support those thus 'disadvantaged', thus adding more costs to the EU budget. Subsidies, which already cost EU taxpayer money, cause problems, which then end up being addressed by spending more EU taxpayer money.

Therefore, EU subsidy levels must be reduced to limit their negative effects within the EU and beyond its borders.

Ensure sufficient levels of food security

Extensive use of agricultural subsidies is often justified by the need for food security or food self-sufficiency. Our food security entails that we are able to produce sufficient quantities of food locally so that in the event of war or some novel global catastrophe, we are not overly reliant on imports. This can be a valid argument, but one that should be considered explicitly when deciding on the amount of subsidies dedicated to achieving a secure level of food production. As previously discussed, there are significant direct and indirect costs associated with the use of subsidies; therefore, a careful balance between cost and security should be sought.

Allocate more funds for new technologies

If CAP subsidies must be used, a bigger proportion of the funds should be allocated to increasing automation and robotisation, which could bring significant productivity gains in the coming years.

Implement better migration policies

Countries that have large labour deficits should relax their migration policies as much as possible to ensure an influx of skilled and low-skilled foreign workers willing to fill jobs that their own citizens are no longer interested in.

Enhance farmer associations

The EU should promote collaboration and association among farmers to improve market access and collective bargaining power. Better cooperation between farmers can lead to increases in efficiency and profitability. The overarching goal should be to reduce the number of disadvantaged farmers by creating an environment and an institutional framework that enables smaller farms to be viable and sustainable.

Increase investment in infrastructure

Romania must invest in modernising agricultural infrastructure, particularly in irrigation and storage facilities. This type of infrastructure would greatly contribute to enhancing productivity and, therefore, profitability, increasing the resilience and sustainability of small farms. Supporting voluntary cooperation among farmers and local communities in developing and managing shared infrastructure, such as community storage spaces or collective irrigation systems, should be accorded a higher priority.

Encourage sustainable agricultural methods

If an environmental-friendly approach is indeed the number one priority of the EU, we must recognise and address the environmental implications of the current agricultural subsidies and practices. A key strategy in this regard would be to realign subsidies to support initiatives that prioritise environmental preservation. This includes incentivising actions that safeguard biodiversity and actively work towards mitigating the effects of climate change. By doing so, the focus needs to shift from traditional, possibly harmful agricultural methods to more sustainable and eco-friendly practices and align farming activities with broader environmental objectives.

Innovation and technology serve as strong allies in accomplishing the goals set by the EU. Techniques such as vertical farming or the use of GM methods contribute to enhanced productivity, increase yields and income for farmers, and reduce GHG emissions, fuel consumption, and water usage. Regulations impacting the development of innovation and technology in agriculture should be promptly revised or even eliminated, if necessary, to minimise any potential barriers to economic agents freely developing and implementing beneficial technology.

Foster GMO research and revise regulatory frameworks

The EU must prioritise the reform of existing policies concerning GMOs by grounding them in rigorous, evidence-based approaches. This includes investing in comprehensive research to explore the full spectrum of potential benefits of GM crops, such as increased crop yields, improved nutritional content, and reduced reliance on chemical pesticides and fertilisers.

Foreground better health and care for the environment

Better health and better care for the environment should be the main goals of the EU's agriculture policy. Nothing will ever be 100 per cent safe. Traditional farming techniques can cause a lot of damage to the environment and have negative effects on people's health. GM crops are not automatically bad, and traditional crops are not perfect. Our aim should be to find the best mix that can ensure public and environmental safety while harnessing advancements in science and technology.

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